

INDEX TO VOL. XXXIV

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Original Articles.

PLAGUE IN MONKEYS & SQUIRRELS.

BY DR. ALICE M. CORTHORN, M.B.,

On Plague Duty, Bombay.

My attention having been called by F. K. Vincent, Esq., Chief Plague Authority in Gadag, to the fact that several monkeys had been observed to drop dead from the trees, I asked him to try and procure for me some specimens for examination. This he kindly did, and on December 10th, 1898, I examined the bodies of two monkeys picked up that morning and in both of which rigor mortis was well marked.

Monkey I.—In the first there was a bubo the size of a large cherry in the left groin, which on dissection consisted of a group of four glands, hard and purplish in colour with a good deal of cedema of the surrounding tissue. From this I made a smear preparation which showed an enormous number of organisms resembling the plague bacillus; and I also inoculated a tube of agar on which I found within 24 hours plague like colonies.

The spleen was much enlarged, and from it I made both microscopical and culture preparations with the same result as from the bubo.

Monkey II.—In the second monkey there was a small bubo about the size of a bean with some fullness in the right axilla. From it I obtained a successful smear preparation but the culture was a failure. The spleen resembled that in the first monkey and gave both a good smear preparation and a growth of plague like colonies within 24 hours.

The three tubes were sent to Dr. C. J. R. Milne, I.M.S., of the Plague Research Laboratory, Bombay, for further examination.

In both monkeys the general appearance was similar to that observed in human subjects dead from plague. There were numerous subserous and submucous ecchymoses and the blood was dark and unduly fluid.

Squirrels.—On December 17th, the body of a grey striped squirrel was brought to me. I found no bubo, but the spleen was nearly 3 inches long, about 1 inch wide and $\frac{1}{2}$ inch deep. catarrh except preparation from it showed typical and a growth was

*Note by C. J. R. MILNE, M.B.,
Captain, I.M.S.*

A.—Monkeys.—Miss A.M. Corthorn, M.D., on plague duty at Gadag in the Dharwar District (Bombay), sent me on December 12th, three sub-cultures from the spleens, &c., of dead monkeys. She says in her letter: "Both monkeys were observed to drop dead from the trees, and about seven monkeys have been observed to do the same thing within the last few weeks." The tubes were contaminated with various organisms which is not surprising when one considers the conditions under which Miss Corthorn was working. Several plague-like colonies were noted in each and these were transferred to and spread over fresh agar slants. By successive sub-cultures, a pure growth of plague was obtained, and this was finally transferred to coconut oil bouillon in which the characteristic stalactite growth was observed in about three days. On January 2nd, '5 c.c. of a five days' old culture in bouillon was injected into a healthy rat. The rat died 67 hours after inoculation and the tissues were found to be swarming with plague bacilli. Sub-cultures were made from the heart's blood, liver, &c., and these all exhibit pure plague growths. Miss Corthorn, I may add, notes that the monkeys examined by her had buboes and one of her cultures was made from a bubo.

B.—Squirrels.—On 17th December 1898, Miss Corthorn examined a grey striped squirrel's body and made cultures from its spleen. A suspicious growth occurred in 24 hours, and she sent on a culture to the laboratory which reached me on December 22nd. The appearances were exceedingly plague-like and sub-cultures were at once made. Pure cultures of plague were obtained on agar and in bouillon similar to that noted in the case of the monkey. A rat inoculated with '5 c.c. of a 5 days' old culture in bouillon died of plague in 79 hours.

The importance of the fact that animals such as monkeys and squirrels are also susceptible to natural plague infection in addition to rats cannot be over-estimated, especially in their relation to the carrying of infection from one district village to another. These squirrels and monkeys are so common in India that they might well be considered as pests.

These investigations are being still further pursued, but Mons. Haffkine considers that the results of the investigation so far are so important as to be worthy of immediate publication.

Mr. H. M. Phipson informs me that the monkeys referred to by Miss Corthorn are probably the "*Mucacus Sinicus*," while the squirrel "*Sciurus*"

ODD NOTES.

By ARTHUR POWELL, F.R.C.S.,
Kalain, Cachar.

COLOTOMY FOR INTRACTABLE DYSENTERY.

SOME four years ago there was in this district a severe epidemic of dysentery in many cases of a sloughing character. When once the sloughing stage set in, no treatment seemed to have the slightest effect in averting a uniformly fatal issue. As in cystitis, I have found the most certain and happy cures result from cystotomy. I thought I could offer some hope to the victims of this sloughing dysentery by opening the bowel above the diseased portion, especially as *post-mortem* examination shewed the disease was mainly confined to the sigmoid flexure and descending colon. By opening the cæcum or ascending colon, the irritating fæces could be diverted from the diseased channel, and mild antiseptic solutions applied directly to the sloughing ulcers. I could get only two patients to consent to this procedure. The first died the night before the day fixed for operation. The second was a coolie, male, aged 24. Large quantities of muco-pus and blood with occasional stinking sloughs were passed. Tormina and tenesmus were so excruciating that he willingly offered to submit to anything which would end his agony by either cure or death.

Operation.—The ascending colon was drawn out through a small opening in the right groin. A glass rod was passed under it, either end of the rod resting on the skin of the abdomen. The serous coat of the bowel was attached to the skin. The sphincter ani was then forcibly ruptured to relieve the tenesmus which seemed due to an ulcer low down in the rectum. The whole proceedings scarcely occupied a quarter of an hour. Nine hours later an opening was made in the bowel. The colon was gently irrigated with warm boric lotion. The relief to the tenesmus was complete, and for two days the patient seemed to improve, when sharp hæmorrhage set in, and the patient sank, 57 hours after the operation. Though I have not the fortune to report a successful case yet, I believe the principle of the operation, the insuring of rest and cleanliness for the diseased bowel, is thoroughly sound. Were my own life ever threatened by dysentery, intractable to other treatment, I would urge my attendant to adopt a similar procedure.

DYSENTERY IN JAILS IN INDIA.

A short time ago, a certain section of the press took delight in decrying the "starvation" and "cruelty" in Indian jails. It is a well-authenticated fact that in 1869, an earthquake laid the walls of Silchar jails as flat as those of Jericho. All the prisoners, some 400, escaped, paid visits to their friends and the bazaar, and with the exception of three, every single individual volun-

The three exceptions returned of their own accord next morning!

Two years ago I visited some of the largest and best appointed lunatic asylums in England. I diagnosed clinically, and *post-mortem*, many cases of dysentery to the horror of the medical officers. I was entirely wrong, *they were only cases of gangrenous or ulcerative colitis!*

Perhaps some Jail Superintendent in Bengal will take the hint and completely clear his jail of dysentery on paper.

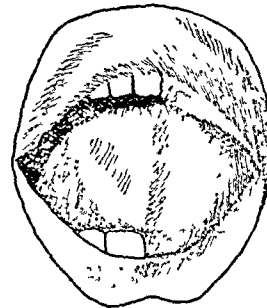
SUFFOCATION BY A ROUND WORM.

A coolie boy, aged 7, in apparently good health, suddenly vomited, coughed, "turned black in the face," and died. When I arrived he was already dead. There were two round worms in the vomited matter.

Post-mortem.—I found a living, but very sluggish round worm, seven inches long in the trachea, about an inch and a half protruded beyond the vocal chords. Except the presence of round and whip worms in the intestine, and an enlarged spleen, all organs were healthy.

ACQUIRED TONGUE-TIE.

Bengali boy, aged about 9, had suffered from ulcerative stomatitis, probably of aphthous origin. When seen by me, the lower lip from the right angle to opposite the outer edge of the median incisor was firmly united to a corresponding length of the margin of the tongue. None of the right lower teeth except the median incisor were present. It is extraordinary how the boy could have kept the ulcerated surfaces of tongue and lip in apposition long enough to secure union.



I have never seen a similar case, nor can I find any record, though analogous cases are so common in the eye in the form of ankyle or symblepharon.

DISEASE OF THE MALE BREAST.

Scirrhus, apparently primary in both breasts, K. M., Mussalman, aged 52. The left breast presented a tumour about the size of a golf ball firmly adherent to the skin, but freely movable over the subjacent structures. The right breast was occupied by a larger, more

Both tumours were freely excised at one operation. The left axilla was not opened. The right was cleaned, and the thoracic portion of the pectoralis major removed in one piece with the right tumour. I have never heard from the patient since he left hospital.

Histologically, both tumours were hard scirrhus. I am inclined to believe that the tumours were a coincidence and arose independently of one another; because, 1st, there was no glandular enlargement in either axilla. 2nd, there was no evidence of secondary deposit in the viscera or elsewhere than the breasts. 3rd, the patient (Bengalis are not famed for accuracy), said the tumours began simultaneously.

Epithelioma (?) of Breast.—A. M., Mussalman, aged 40, presented a fungating tumour of the left breast, about the size of a walnut. It presented the clinical characters of epithelioma originating in the nipple, but as after removal, the specimen got mixed up with some others owing to rats or ants eating the labels off the bottles, the histology is uncertain.

There was no recurrence 22 months later.

True Hypertrophy.—M., coolie, aged 22, had breasts as well proportioned as those of the Venus de Medici. They were firm, prominent, and would have been an ornament and source of pride to a woman of his age. I assured him they were harmless, but he begged me to remove them as no girl would marry him, and he would prefer death to the merciless chaff of his fellows. The organs of generation were well developed as was also the beard. I removed both breasts at one sitting, and found that though mostly made up of fat, there were numerous lobules of true gland tissue. I met him six years later when he informed me he was married, and the reputed father of two children.

False Hypertrophy.—Hindu, aged 20, was continually begging me to remove his breasts which, except when his chest was bare would not have attracted notice. By reason of his importunity, I at last removed the right breast without chloroform. He preferred to keep the left. Except the nipple and skin, the "tumour" was entirely fat.

HEREDITARY TENDENCY TO CATARACT.

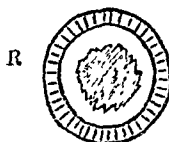
Since writing on this subject in the August number of this *Gazette*, there came to me a father with his only two children, all suffering from cataract.

Father, Mussalman, aged 27, right eye blind for three years. 27th October 1898. Through a small incision, a soft fluid cataract was removed, all but a portion of white opaque posterior capsule. This needs removal by hook later on. Left eye has fair vision but presents a trefoil shaped opacity.

Elder son, aged 6, left eye showed uniformly bluish white lens. 27th October 1898, "needled" with Graefe's knife, completely evacuated fluid cataract except piece of capsule, size of a pin-

head. Right eye, 31st October 1898, under chloroform, as child proved very unruly at previous operation; removed completely an identical cataract.

Younger son, aged 3, 31st October 1898, under chloroform, "needled" with Graefe's knife both cataracts, evacuated greater portion, leaving a little in each eye which subsequently completely absorbed.

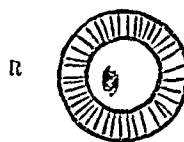


R



L

Father's Cataracts R. after evacuation.



R

Elder son R.
after evacuation
showing
dot of opaque
capsule. L.

presented a similar dot of capsule
which was evacuated with rest of
lens.

The parents said both children were blind from birth; vision in both children soon became excellent. For some days it was most amusing to watch the children learning to pick up articles, both within and beyond reach.

HINT ON THE DIAGNOSIS OF URINARY STONE IN ASSAM.

Many surgeons in large practice in Assam have never met a case of stone, and attribute to me special luck or popularity in having met over a hundred.

I was two years in the district before I learned that coolies, Bengalis and Manipuris alike, describe every disease associated with painful micturition as "gonorrhoea," that is to say, use the vernacular word, "ধাত," "dhat."

It is very unusual for a *villager* to seek European advice for gonorrhoea of less than a year's duration. It is, of course, otherwise with sepoys, policemen or coolies in want of sick leave. I now find that at least two of every three *villagers* who consult me, saying they have "dhat," have in reality either stricture or stone.

I fear it is too much the custom of young surgeons, I confess it was mine, to hand these cases over to subordinates, who, without any cross-examination or inspection, prescribe copaiba and injections a "routine treatment."

In this district stone is most common among Manipuris and Bengalis. Should one of these races consult the young surgeon in Assam, perhaps in Bengal also, I am sure he will have no reason to regret this hint, if he rejects the patients' diagnosis till he has confirmed it by cross-examination and the sound if necessary.

MEDICAL ETHICS.

AN ADDRESS BY

P. S. CHANDRA SEKAR, M.B.,

To newly qualified medical men at the Madras Medical Association in 1898.

I, on behalf of the Madras Medical Association, congratulate you, gentlemen, on your recent success, and heartily welcome you into our folds. You have all gone through a very arduous course and have been rewarded with well-deserved success. You have got through the difficulties of the examinations, no doubt, but the difficulties you have experienced are nothing in comparison to those in store for you. As Dr. King observed the other day in his Convocation address, you have before you "a career that gives unusual opportunities of abnegation of self but little of earning wealth." If you have joined the profession with the sole object of making much money, you are sure to be disappointed (provided you are upright). In your future career, you are very often likely to be unable to carry out the hygiene rules about regularity of sleep, meals, exercise, &c., although you might be preaching the same to others. The unseasonable calls generally make it inconvenient for medical men to act up to their preaching in these respects. But as irregularity of habits is sure to derange your health, I would strongly advise you to try to arrange your work so as not to interfere with regular habits, and to make it a point to take regular daily exercise and an annual holiday to recruit your health. You have already learnt a good deal about medicine, surgery, and various other medical subjects, but one more subject remains to be learnt, *viz.*, medical ethics. As in the course of your practice you are likely to meet with many difficult questions of medical ethics, I will just touch upon some of them for your benefit, so that you may avoid many unprofessional and undesirable practices in your future career. To be forewarned is to be forearmed.

We shall first take up the various devices for securing patients. The foremost amongst these is "advertisement direct." Advertising one's qualifications, real as well as imaginary, and contributing eulogistic articles about one's self to the papers are certainly unprofessional. No member of any of the learned professions can do such an act either in Europe or America. When one advertises himself, he has to give some reason why the public should patronize him above all others, and so all his qualifications are set forth in detail, with, of course, the covert object of hinting the inferiority of many others. Any undue prominence which the advertiser usually seeks for himself is likely to be prejudicial to the peace and goodwill of the profession. You must again bear in mind that professional

knowledge is not to be grouped with such articles of commerce as Pear's soap and brandy bottles; being a more valuable commodity it should not be advertised for sale. Sometimes advertisement may take more indirect forms. It is not unusual to find at times articles in the papers highly flattering to some practitioners who might very probably have contributed them themselves. If the practitioners in question have had any hand in them directly or indirectly, the conduct is very reprehensible. But if they know nothing about the matter, I think it is advisable on their part to ask the Editor to insert a note to the effect that they have had nothing to do with the articles.

The practice of some, of notifying their arrivals and departures in the local papers, is certainly another objectionable form of advertisement. Moreover, it is ridiculous that such practitioners should be vain enough to think that their movements are so important to the public as to be always watched with anxiety. I am not now speaking of such notifications of the movements of distinguished men, which are made at times in the papers without any knowledge of the men concerned. A certain amount of publicity of movements is unavoidable in the case of persons who are on the topmost rung of the professional ladders, however disagreeable such notifications may be to themselves. Publicity is one of the penalties to be paid for distinction.

Another objectionable means of securing work is the employment of touts, which, I am sorry to say, is fairly prevalent in this city. The most direct way is to employ somebody to canvass for patients and pay him a certain commission. It can also be countenanced indirectly by treating a patient gratis on the *distinct understanding* that he is to fetch you patients. Another method is to enter into a contract with nurses or chemists to patronize them, they in their turn undertaking to send you cases. It is needless to point out that all these practices are highly objectionable. The most important reason is that the patient is not able to find out the real merits of his doctor when engaging him for the first time. The tout is ever on the alert to find who are ill and tries his best to send the patient not to the best doctor procurable with the patient's means, but to the doctor who pays most commission to himself; the patient thinking all the while that he is taken to the best man procurable with his means. It is certainly downright cheating to mislead a patient directly, or indirectly through a tout. If a patient comes to you, let him know your merits fully and select you with open eyes. Further, the tout, who has absolutely no qualification but that of dishonesty, should certainly not derive a profit by merely canvassing for you. Your knowledge of medicine should not be

used for any other purpose than that of treating the sick and getting an honest livelihood for yourself. The professional knowledge is debased if you enable any scamp to make money under your cover. Another disgraceful device a medical man may resort to, at times, to increase his clientele is to speak disparagingly of a fellow-practitioner who has been treating a case before you. If you do, your evident object is to make the patient think that your predecessor is incompetent, that you are a better man, and that you would be the proper person to be consulted in the future.

Even when you think that your predecessor has treated wrongly, it is your duty to be silent. No man is immaculate, and you must bear in mind that the treatment you think correct may possibly be the wrong one and might evoke a similar criticism, if not a harsher one, from your successor. Again, it is unfair to criticise a brother behind his back. Your predecessor has been attending at an early stage of the disease, and the symptoms now present may not have fully developed then. If you do criticise unfavourably, not only is it unfair, but it will also lower the prestige of the profession in the eyes of the public.

If you do speak unfavourably of the previous treatment, and if your predecessor comes to know your remarks (he will surely know one day or another), he will take offence, wait for an opportunity to sting you when you least expect it, and often to your great disadvantage.

Even if you are pressed by the patient to express an opinion about your predecessor's treatment, refuse to criticise. Patients often, with no proper reason, dismiss a medical attendant and want to find out some fault in his treatment as the cause of their dismissal, and they naturally depend on you for a criticism and the discovery of an error in the previous treatment. Whatsoever a man soweth that shall he also reap. Whatever you do, you must bear in mind that a similar thing will in store for you, when you yourself are superseded by a third man.

Your duty is with the present and the future and not with the past. The past is over, and no amount of talking about what should have been done will help your patient or yourself as to the future. At all times you must be careful about disparaging your professional brethren before lay people, though it may be a public duty to expose such moral delinquencies as hard drinking, &c.

You must avoid all doubtful expedients to obtain patients, for such tricks won't serve long, and you are sure to be found out one day or another. The public will one day perceive you in your true light and will hold you in great contempt. There is nothing like straightforwardness in the long run. Very often you may have the misfortune to see your friends going

in for medical advice from other medical men. Under such circumstances you would better avoid seeing the patient, as any such social visit is apt to be misconstrued by the medical attendant, and to give rise to unnecessary ill-feeling between professional brethren. Let me point out one more questionable method of attracting patients, *viz.*, advertising oneself as a specialist, or making people believe that one is a specialist by his conversation.

I have already pointed out that advertising in any form is considered objectionable. I will only add, now, that nobody can be called a specialist if he has merely attended a certain number of months in a special hospital as a student or an apothecary.

One becomes a specialist only by treating diseases of special regions exclusively for a long time. A specialist must devote his whole attention to his special subject. A general practitioner can never be a specialist for the simple reason that he does not study any single subject. His attention is distracted by such a variety of cases that he can't make a special study of anything. I don't mean to say that general practitioners should never treat diseases of certain special regions. As a matter of fact, they have to treat, and do treat, such cases as, say, sore eyes, iritis, otorrhœa, &c. But then for complaints requiring special skill he has to call in the aid of specialists, say in such instances as ovarian tumours, cataracts, &c. Here we require the special skill of men who have done innumerable operations of a like sort, and who know the various complications and unforeseen difficulties and the appropriate remedies.

I contend that a general practitioner can't have such special skill. I am sure you will all be engaged in general practice, and I advise you not to be tempted to call yourself specialist at any time. There is nothing to prevent your following up any special subject; but you must stick to that if you want to become a specialist.

Next, I will pass on to the various questionable means of making money. One of them is taking commission from druggists for sending prescriptions to them. I must condemn this as a very ungentlemanly and unfair practice. If you take commission, where is the money to come from? either from the patient or from the chemist. In the former case, the patient is made to pay the cost of the medicine plus the doctor's commission. If the doctor takes no commission, the patient can get his medicine cheaper. The patient very often goes to a chemist recommended by a doctor, believing that he has recommended the most reliable and at the same time also probably cheap chemist, and in total ignorance of the fact that he is being sent to the chemist who pays the most liberal commission to the doctor. Fleecing the patient thus on two sides, firstly, for advice, and, secondly, for medicine, is, to say the least, highly

unprofessional and unfair. If the patient knows that you are sending him to a chemist who subsidises you, he is naturally apt to resent and seek some other chemist. He may even seek other medical aid than yours. The practice is unfair, prejudicial to your own interests in the long run, and is one which must be carried on stealthily. But some might argue that the doctor's commission need not be charged to the patient's account by the chemist, and that the patients might be charged just as they would be if no commission were paid to the doctor. It might be said that the cost price of the medicines is very little, while the profits occurring from the prescriptions are very large, and that the chemist can very well afford to pay a small percentage of his profits to the doctor for his kindness in patronizing him. They consequently think that nobody is fleeced, and that there is nothing objectionable. But the commission comes now from the chemist's pocket. He pays it not because he is very contented and has got superfluous money to get rid of, but because he is compelled to give it in order to secure the doctor's patronage, which is necessary to make his investment a success. In these days of keen struggle for existence, the chemist will forego part of his profits, on the principle of "something is better than nothing." If any druggist will not debit the doctor's commission to the patients' account, but pays it out of his own pocket, all I can say is that he is a rarity, and that he is more honest than the doctor.

If you do take commission, you must fleece either the patient or the chemist; one is dishonest, and the other is unfair. It is no argument to say that a druggist will be satisfied with a smaller profit, while the doctor himself is greedy of getting more money in the way of commission in addition to his professional income.

Another questionable practice of making money is the manufacture of secret remedies. I do admit that the ingredients of such remedies may possibly be found in the pharmacopœa, but the same combination can never suit all cases under all circumstances. Consequently, they are likely to cause more harm than good, as they will often be used by lay people who know nothing either of the ingredients or of their complaints. Besides, such manufacture of secret remedies smells decidedly of quacks and imposters, and should never be countenanced by qualified medical men.

One superiority of the Western methods of treatment over the native methods consists in the openness of the procedure. There is nothing secret, and any qualified man might criticise our treatment. Amongst the native quacks (I am sorry to say that they are called native doctors by some educated people, who ought to know better), the custom from time immemorial has

been to charge for the medicines and nothing for the advice, which probably they themselves did not think worthy of remuneration. In fact, they have been playing all along the rôle of counter-prescribing chemists; and, being such, it was their self-interest to keep the medicines secret so that they may derive a profit. It is quite the reverse with us. We attach more value to our advice. Our advice must be paid for by people who can afford it, and it is the chemists who pecuniarily profit, or at least ought to profit pecuniarily, by the prescriptions. So there is no necessity nowadays to manufacture quack medicines. I would strongly advise you not to be tempted in your future life by any prospective gain to manufacture or lend your name to the manufacture of such remedies. The market has been flooded enough with asthma cures, and ague cures, ring-worm specifics and itch specifics, fever pills, indigestion pills, and nerve recuperators, Monday pills and tonic mixtures and what-nots. I hope you won't add to the list of such nostrums. Avoid prescribing patent medicines as much as possible. The manufacture of secret remedies is highly prejudicial to the best interests of the profession, as the public will begin to treat themselves with such nostrums to their own detriment, and to the detriment of the body of the profession, for whose services there will be less need in the future.

No doubt it will benefit a small number of inventors of such nostrums; but the prestige of the profession, as well as the public safety, will be in peril.

Another disgraceful method of making money is to give false certificates. The temptation is always great in such cases, as very large fees will be offered. But your duty is clear. If you do give, firstly, it will be a lie, and so is ungentlemanly; secondly, it will unjustly injure certain parties pecuniarily or morally, as they would really be sought for such purposes; thirdly, by giving such you will disgrace a noble profession in the eyes of the public; fourthly, you prove yourself unworthy of being counted in the folds of medicine; fifthly, you will be liable, if found out, for prosecution, which will end in disgrace; and sixthly, if you are in the Service, you will fare very badly when your misdemeanour comes to the notice of your superiors. The same remarks might well apply to certifying criminals insane, and to the production of abortion you can never be too careful in treating woman during the child-bearing period when suffering from amenorrhœa. Be very careful not to procure or abet abortion, directly or indirectly, however tempting the fee might be. It is unscrupulous and criminal, and involves social disgrace, professional ruin, and the penalty of the law. Those of you who may have to enter the Service will have to guard yourselves against another

questionable way of making money, viz, taking money and presents from the hospital patients. I know fully well that you are all too gentlemanly and honourable to do such a thing. But I just mention it here so that you might be fully aware of the temptation and not yield to it even in your weakest moment. It is not proper for various reasons. The patients who seek relief, or at least ought to seek relief, in the charitable institution—the hospital—are the poor who deserve your compassion and kind treatment. Perchance if they find it necessary to pay, some one of their relatives might borrow or with great difficulty procure some money; but that does not prove that they are well off. It is quite possible that many well-to-do people will get into the hospital. In their case your proper duty is not to take money from them, but to have them discharged, so that they might be treated outside on payment. If you take money from some whom you think to be well-to-do people, you will have to bestow more attention on them (in return for the money) than on the poor patients who can't pay. Otherwise why should they pay? They do expect it, and you tacitly agree to it when you take money. To put it in other words, you pay less attention to the really poor merely because they can't afford to pay you. The poor require your consideration for two reasons: firstly, their poverty, and secondly, their sickness. Those who give you presents can be well treated even outside the hospital, whereas the poor cannot be well treated outside; so I think the poor deserve better treatment at your hands. When you are employed in a hospital the tacit understanding is that you should discharge your functions to the best of your ability. If you do take money, you must have resort to two methods of treating similar cases, and the patients giving presents will certainly have the best treatment. Evidently, then, the poor can't have the best treatment available. So long as you are paid to do your work in the hospital you must discharge your work conscientiously and to the best of your ability. The hospitals are intended for the poor, and so you will be paid to treat the poor. If you treat them indifferently or not so well as you do others who pay you, you will be failing in duty. You must do your duty without expecting presents. England expects every man to do his duty (of course without the incentive of a present). The same adherence to duty is preached in the Hindu books on philosophy and religion. You must do your duty wherever you are placed irrespective of the consequences (of course the pecuniary consequences are included).

Again, if your superiors find out your propensity to speedily get rich, you are sure to land in trouble. You should not only avoid taking presents even when voluntarily offered by grate-

ful hospital patients, but should also enforce the same upright behaviour from the menial staff. Even in private practice you would better avoid presents of any monetary value, for such presents, however agreeable at the time, will one time or another surely diminish your legitimate remuneration. Patients will think at times that the remuneration might be reduced on account of previous presents made. They will say—"Last time I gave the doctor some presents in addition to his legitimate fee; now, as I am short of money and can't pay him as before, a small sum will do this time." Surely the doctor cannot grumble after having taken the present on the previous occasion! Remember that yourself and the patient won't estimate the money value of the present in the same degree, and you are sure to suffer pecuniarily in the long run. But you will meet now and then with patients whose behaviour will surprise you, and who will not remunerate you properly; they will think that a present will be enough. Under such circumstances, take it readily, as something is better than nothing; but have nothing to do with them subsequently.

Another method of making money by undesirable means is the maintenance of dispensaries by medical men. Such dispensaries are undeniably sources of profit to the men in charge, but they are to be discouraged for various reasons. When one keeps a dispensary he invests money on drugs, and he naturally expects to make as much out of it as he can, just like any other trader dealing in broadcloth or boots. Human nature is the same everywhere, and a trader in drugs differs in no way from a trader in shoes or stockings or any other article of commerce. As the tendency is to make a large profit, the chances are that the drugs will be bought in the cheapest market, which is not always advantageous to the patients. In the case of chemists, no doubt many might purchase in the cheapest market; but if medical men take care to patronise only reliable chemists, there will be a healthy competition amongst them, with the result that good and reliable drugs can be procured. In case you keep a dispensary it is not likely that it will be completely equipped, and in prescribing you are likely to carefully eschew preparations not to be found in your almirah. Such a limitation of choice is not an unmixed good to your patients. Every one of us is likely to err, and especially in the commencement of practice. If you do commit a mistake in prescribing, and if the prescription happens to go to a stranger, it is likely to be pointed out and also adversely criticised. Such adverse criticism, I submit, is not undesirable, inasmuch as you would take that to heart, and be more careful in future. It would prevent you from tripping in the future, whereas if you send your prescriptions to your own dispensary,

such errors are likely to go uncorrected to the great detriment of the patient.

Some are tempted to keep a dispensary in order to avoid their prescriptions being seen and criticised by others.

As I have already pointed out, such adverse criticism is always beneficial, as more is learnt by failure than success. Moreover, no man has a business to prescribe who is afraid of submitting his prescriptions to scrutiny. If you prescribe correctly, you have nothing to fear. If you have not, you must learn, though in an unpalatable way. There should certainly be an openness in prescribing. Practitioners who keep dispensaries will generally give medicines and not prescriptions, for the prescriptions might go elsewhere. Even if they do give prescriptions, they are likely to write their prescriptions in some mystic language or A.B.C. Code, which can only be understood by the compounders in their own dispensaries. The giving of a prescription is thus rendered a farce. When a patient goes to one of such men for advice, he has not only to take his advice (which is more in the way of directing him to go to his own dispensary than anything else), but he must perforce have the doctor's own medicine poured down his throat. He must pay, too, for swallowing the medicine. He can get away if he likes, but he can't get away with the paid-for advice, for the doctor's advice is bottled up in the almshouse of his dispensary. He comes for the advice, but can't have it without the doctor's own medicine.

Some will improve upon this state of affairs and will advertise "Consultations gratis, medicines only charged," so a patient need not complain that he can't take away with him the paid-for advice. If he likes he can take medicine, and, as a discount, the doctor will give advice gratis. The doctor is so much interested in the sale of his drugs that he offers a premium on the medicines, *viz.*, advice gratis. Another improvement is to charge very low for advice, and charge only the so-called cost price of the medicines. Now we shall look seriously into the state of affairs. Is not this advice-gratis business reprehensible? Yes, it is. How is the doctor living, and how is he making money? True, he requires no remuneration for his advice, but then he makes it up in the medicine bill. If he were to charge the actual cost of the medicine he can't get on; he must collapse. He must make money, and that he makes by the sale of his drugs, to which his medical qualification is merely an advertisement. If he wants to make money by the sale of his drugs, why should he go through a long and arduous course of instruction for a medical qualification? There is no necessity to degrade a noble profession. He might have qualified himself as a chemist and druggist after a short course and stuck to advertisement

in the papers. The prostitution of a noble profession for such a purpose is objectionable. Even after qualifying as a medical man he might eschew practice altogether and set up as a pure chemist. In fact, such a man has dwindled down to a chemist. Not only do such people dishonour the profession, but may cause considerable harm to their fellow-practitioners who may not stoop to keep a shop.

If the dispensing doctors supply advice gratis and the medicine gratis, I can have nothing but admiration for their philanthropy; but they can't do that, as they must live and get on. The public think that medicines have to be bought by doctors, they must be naturally paid for; and that doctors can afford to give advice gratis as they don't lose anything from their pocket. Poor fools! they do not know that the consultation fees are duly included in the medicine bill.

This practice of pretending to give advice gratis, or almost for nothing, and charge all dues under the heading of medicines is, to say the least, making money under false pretences. The public probably has no idea of what is being done. Apart from this ethical view, there is another aspect of the question in this country. The public in this country has long been accustomed to the view that medical men don't deserve much remuneration, and that it is only the medicine that should be paid for. The public mind should be disabused of such an idea before the status of the profession can be raised in this country, and the advice-gratis business is certainly not the method of achieving this object. In the interests of the profession, the dispensing doctors may charge for the advice and give the medicines gratis. I don't approve of that either, but it is better than the present condition of affairs. Dispensing and doctoring are two different professions. If the doctors won't stick to their business, the chemists would prescribe. It might be said that the doctors have a right to dispense, whereas the chemists have no right to prescribe. It is true, but unless we wash our hands off dispensing, it is too much to expect chemists not to prescribe as they do it in self-defence to make up the deficiencies in their legitimate line. Two arguments are usually brought forward in favour of dispensing by doctors. They are, firstly, the convenience of the patients, and, secondly, the reliability of the drugs used in making up the prescriptions.

If doctors don't dispense, and will patronise only those chemists who use the purest drugs and the ablest assistance, a healthy rivalry will be created, and there ought to be no difficulty as to the correct making up of the prescriptions. As to the convenience of the public, if doctors won't dispense, chemists would find it paying to open many branch dispensaries, so as to suit the convenience of the public. I don't think

these two arguments will hold water. Dispensing by medical men is highly undesirable, particularly in India, except in country-places where there are no chemists at all. Then, of course, there is no option. That the view, set forth thus in detail, is also held by the enlightened public might be evidenced by a quotation from the *Times of India*—a lay paper. "On general principles it is unsound to get prescription and medicine from the same practitioner. It is done as a matter of convenience and cheapness, but it cannot be defended as the best for the patient. A medical man, who is paid for his prescription only, will order what he considers best, irrespective of its price or whether it may be had in a particular dispensary. It does not concern him whether quinine is Rs. 10 an ounce or whether there is a corner in iodide of potassium. He orders the drugs that, to the best of his knowledge, the patient's condition demands. This, we presume, is the mental attitude which every patient likes to see in his medical adviser. His point of view, if he can afford it, is to get well *citotuto et jucunde*, but especially cito, quick. He then takes the recipe to respectable chemists, with the assurance that if by any possibility an error of quantities occurs it will have this independent check from trained dispensers. On the other hand, the medical man, who both prescribes and dispenses must be the soul of honour to carry on his office with entire regard for those who consult him. The temptation to adopt his prescriptions to the furniture of his own shelves and to the prices ruling in the drug-market, must be overcome, but the position is not a fair one to the patient. At a time when both eyes should be turned on the question of cure, it cannot be sound to have one eye turned towards the prospective profits of the medicine bottle. It would be far better for the suffering world if the trade element be ruthlessly swept out of these relations between doctor and patient, and medicine could everywhere be made again what it ought never to have ceased to be — a profession."

In sending your prescriptions you must, of course, take care that you don't patronize the chemists who are fond of prescribing or criticising. Your patronage should be uniformly distributed if there be more than one deserving reliable chemist.

The struggle for existence is getting keener and keener every day. Every profession is being over crowded, and everybody is trying hard to secure his livelihood. The overcrowding gives rise to considerable friction and irritation and ill-feeling, and professional jealousy has always been present amongst medical men, whether in England or in India; but they are kept under control in England by the sense of fair play and justice and public opinion. In England, any misdemeanour prompted by such ill-feeling

or jealousy is checked to a certain extent by the existence of registration and the General Medical Council. In this country, however, the absence of such machinery leads to various unprofessional acts which could not be checked in any way. In the absence of such safeguards, it is doubly our duty to conduct ourselves honourably and keep up the prestige of the profession.

Nothing tends more to demoralize our profession and cause it to be undervalued than the mean, unworthy and cynical way in which many medical men speak of and act towards their professional brethren. If circumstances render it necessary, and if justice demands it, it is our bounden duty to defend them.

One frequent source of ill-feeling between practitioners in this country is the habit of the patients of frequently changing their medical advisers. Very often medical men are dispensed with for no other reason, than the want of so-called good luck; when another medical man is called in, he is not restrained by any professional etiquette, and is only too glad to step in. He is vain enough to think that he has been made to supersede his predecessor on account of his own greater abilities; and he congratulates the patient (mentally) on his strong common sense which enabled him to hit on the right doctor at last. He begins to perceive that the world does recognize merit, though rather slowly at times. He finds fault with everything, regrets he has not been called in earlier, and yet hopes to do the best. The treatment is completely changed, yet no improvement follows. The patient's relatives are getting more and more anxious. Our doctor himself is getting nervous, and does not know what to do. He thinks of trying a new remedy, about which he has read some time back in a medical journal, and which had been reported to have wrought wonderful cures in similar cases. He refers again that night to his journal, and goes to sleep with the comfortable hope of trying it next day. On the morrow arrives a messenger saying that the patient is very bad, and that the doctor need not attend unless sent for. That is evidently a hint to retire. He blames the people for want of patience, and the folly of dismissing him at the most critical period, especially as he intended to try his new remedy. He learns casually that Dr. Bigman had been called in, and gets wild and deplores the absence of all professional etiquette amongst medical men in this country. He is consoled, however, on the next day by learning that Dr. Bigman's visits had ceased, as he declared the case to be hopeless; and that the patient is in the hands of a native barber who has promised to cure by just three doses of a wonderful *basman*. This *basman* is taken once, and the patient dies. The barber consoles the relatives saying that the *basman* is a very efficacious one and that the patient was unfortunate in having died before three doses could be taken.

Our old friend's bluster about professional etiquette is all forgotten in no time. And the same episode is repeated day after day. My description is not fanciful. It is a true representation of what happens only too frequently in Madras.

All feel the need of greater unity amongst ourselves, but few behave in such a way as to make others wish to make common cause with them. A frequent change of practitioners is very common, and we can not prevent that to any great extent. We can no more prevent a man changing his doctor than prevent him changing his coat. But we expect him not to dismiss us summarily and often without cause. The man who supersedes is bound to inquire into the particulars of dismissal of his predecessor, and see that full justice is done to his feelings (and pocket if necessary) before he himself takes charge. But, of course, he is not responsible if the patient misleads him deliberately; under no circumstances should the past be criticized. If the predecessor has pursued a correct line of treatment, it must be pointed out to the patient. You must always avoid seeing patients, who are under the charge of your professional brethren, even for social reasons. Never mind the people's statement that your visit shall be kept secret or any such bosh. If you are told that another practitioner has been dismissed and be asked to attend, you will have to communicate with the previous attendant, unless you can depend on the veracity of the patient's statement.

If the previous attendant complains of the treatment meted out to him, and says he has not done with the case, you must think twice before you take charge. Although, in the interests of the profession, it is thus advisable to communicate with the predecessor and the case must be taken charge of with his consent. I must point out that any predecessor, in whom the patient has lost confidence, is exceedingly foolish if he persists in his desire to continue in charge. If, in the course of your practice, you meet with quacks, which you are sure to do, you should never lose an opportunity of running them down and shake the confidence of the public in them. You should never act in concert with quacks even at the risk of losing influential practice. Whenever you are in doubt or difficulty consult with others. If you have more experienced men or men of better qualifications at hand, better consult them. If they be not available consult the men near at hand, though they may be your juniors. You don't lose anything thereby, but, on the contrary, will gain something at least. You must always bear in mind that the chief element of consultation is the putting together of two heads. The two will view the case from different lights and there is a better chance of successful termination of the case

after the two have arrived at a common conclusion. If the new head be an old head, well and good; if not, let there be another head at any rate. It is on this very principle that two judges sit in appeal in the High Courts over the decision of a single man. The appellate judges need not necessarily be of superior mental calibre individually.

In the case of those of you who may set up as private practitioners, I would advise you to study your cases carefully and not become a mere distributor of cases. If you go on sending medical cases to one man, and surgical cases to another, while you yourself go on dispensing cough mixtures and diaphoretic mixtures, and be content with dressing and compounding and administering enema, you will never learn your art sufficiently well to enable you to stand on your own legs at any time. Further, you will make yourself a laughing stock. In the course of practice, you will be the repository of many confidences, which it is your duty not to disclose under any circumstances. I would advise you strongly not to entangle yourself in law suits and avoid the law courts as much as possible in any capacity whatsoever. It is not the place for medical men. I may tell you that some of the most distinguished, straightforward and talented medical men have been made to look foolish at times by unscrupulous lawyers under cover of their so-called privilege of the counsel. In conclusion, gentlemen, I would advise you strongly to join the Madras Medical Association, the advantages accruing therefrom are many. If you happen to be resident in Madras you can make use of the reading-room and the library that will soon be started, and attend the periodical meetings for scientific discussions with great profit to yourselves. If you be in the mofussil, you can send notes of your interesting cases, which will be read, discussed, and recorded. There is no member of the profession, however humble, who will not meet with interesting cases in the course of his practice. Sicknes prevails, and in very varying conditions all over the land. You do not often meet with the typical symptoms and course described in text-books. There will be many deviations from the typical symptoms and courses. Any rare cases or any interesting features of diseases deserve to be recorded. If you meet with such, I would request you to kindly take notes and send them to our Secretaries. Whenever the mofussil members come over here, they can attend the meetings and can make use of the reading-room and the library. In course of time, the transactions, which will be periodically published may also interest and profit you. If you belong to a medical Association like this, you will naturally perceive that you are one of a great body of the profession, and you are apt to think of the profession collectively. When you do, it is sure to make

you keep up the prestige of the profession. This Association, I may add, chiefly exists for the benefit of the hospital assistants and apothecaries. It hopes to do for them what the South Indian Branch of the British Medical Association does for the graduates and those who are qualified in England. So I hope you will all join the Association, whose sole object is your improvement, and try your best to make it more prosperous. As you have already perused the rules in your hand, I need not tell you that the subscription has been fixed very low so as to enable you all to join the Association. At the same time I hope you will strongly resist the influence of touting agents of quasi-Medical Associations, partly political and partly commercial, which may pecuniarily profit a few, but will do you no good, though it may make your pockets lighter.

NOTE ON DR. POWELL'S PAPER ON "CERTAIN INTESTINAL PARASITES."

By G. M. GILES, F.R.C.S.,

MAJOR, I.M.S.

I AM much interested in the perusal of this paper, as the subject is one to which, I am sure, no adequate importance is generally attached; and the author refers in several places to my previous investigations on this subject.

1.—He remarks on the fact that I did not discover the *Rhabdonema intestinalis*, and appears to imply that my not doing so was a matter of oversight. This, however, I can assure him, is not the case, as I am perfectly sure that the worms would have been noticed in the many hundreds of examinations of dejecta made both with, and without, disinfectants had they been there to see. I was, as a matter of fact, keenly on the look-out for this worm, as I greatly desired to get an opportunity of observing it. It does not follow that because this species is common to-day in Cachar, that it is so in the Brahmaputra Valley also, or even that it was to be found in Cachar ten years ago.

2.—I am much pleased to find that the bodies I spoke of, in my report, as "coccidia" have been noted by a second observer, for I cannot recall any reference to them since the publishing of my report, though they are extremely common, as far as I can make out, in at least all Northern India. They were so common in the class of cases shown me as kala-azar, that, in the earlier stages of my investigation, I was inclined to suspect that they might have a causal connection with the disease. I soon found, however, that they occurred also in natives who were, to all appearance, healthy, and though I believe that their occurrence is favoured by certain diseased conditions of the bowel, I ultimately came to the conclusion that they were of little

importance, at any rate as far as kala-azar was concerned.

Since then, I have constantly met with them, both in the Punjab and in the North-West Provinces; and, shortly before leaving India, I made an observation which has led me to doubt the correctness of my identification of their generic position. Seen, as they usually are, in cold, and perhaps carbolized dejecta, no one would hesitate to place them among the non-ciliate protozoa; but, one day, when examining the just-passed dejecta of a suspiciously anæmic patient, without any addition, I was surprised to find that it contained a number of very active holotrichous infusorians. I made a rough drawing, and then turned aside to affix the camera lucida so as to obtain a measurement of the form, when, on looking through the instrument, I found exactly in the place I had left the specimen I designed to draw, no infusorian but one of my old friends, the coccidia, without, as far as I could make out, a trace of cilia, nor were anything else to be found in the slide, or in the dejecta, which had, in the meantime, of course, become cold. Although I made several attempts, I could not induce the patient to again produce a fresh specimen to order, and up to the time of my leaving, I had no opportunity of repeating the observation, but I am left with the strongest suspicion that the naked bodies that we have been observing are, when alive in the intestine, not coccidia, but infusorians. I publish this very incomplete observation, unconfirmed as it is, in the hope that Mr. Powell may be induced to follow the question up by the examination of some coccidia-bearing dejecta *immediately* after they have been passed. If this suspicion prove well founded, it is probable that the bodies we have referred to as "coccidia" represent really a resting stage of an infusorian, in some way connected with the mechanism of transmission of the parasite from one host to another.

The glance I had of these infusorians was, as I have already remarked, too passing to enable me to make an accurate drawing; but, in the absence of any better representation, I may mention that the infusorian closely resembled the species figured from Collin on page 382 of Neumann's "Traite des Maladies Parasitaires" from the large intestine of the horse.

3.—*Trichocephalus dispar*.—I can confirm all that Dr. Powell says about this worm, and though I believe it to, as a rule, inflict but little damage, it can hardly be possible that cases of infection of its tunnels by the numerous septic organisms common in the bowel should not occasionally occur.

4.—*Amœba coli*.—I am surprised that any doubt should be expressed as to the occurrence of this parasite in India, as it is certainly common enough, but though it may very probably aggravate pathological conditions of the bowel

and its diverticula, I doubt if it be the primary cause of the mischief.

5.—*The question of Kala-azar.*—I can only reiterate my statement that the disease which was causing so great a mortality in the then affected localities was a chronic anæmia, and that the most efficient cause for this, in the great majority of cases, was anchylostomiasis.

Necessarily, in so malarious a district, there were also not only numbers of cases, in which both diseases were present, but there were also a smaller proportion of cases of pure malarial and parasitic anæmia respectively. The coexistence of the two causes appeared to account for the incurability of the condition, for naturally it is of little avail to expel the anchylostoma from a patient whose liver and spleen are so damaged by malaria that they can no longer respond to the demand for new blood to replace that drawn by the parasites.

The only doubt that arises in my mind is whether the disease now present in Nowgong is the same as that which I saw in Kamrup. Whatever our differences of opinion as to etiology, all were perfectly agreed as to the disease being a chronic one, and though a history of fever was more or less insisted upon, according to the etiological bias of the particular writer, it is surprising in how few cases, actual fever, present at the time of observation, is recorded by any of the numerous medical officers, whose reports were handed to me for information. Moreover, even where it is recorded, it is almost always specified as "intermittent" in type, and rarely appears a sufficiently prominent symptom to account for the gravity of the case. Indeed, as far as temperature is concerned, the great characteristic of the disease, as I saw it, was that it was often persistently subnormal for days together, and quite rarely rose above the normal, unless there was some intercurrent condition to account for it. Captain Rogers' report was so filled with special pleading against the admittedly prevalent anchylostomiasis being anything but a sort of blessing in disguise to the Assamese, that I was left with no very clear clinical picture of the disease as he saw it. Within the last few days, however, I have received, from Lieutenant-Colonel Ronald Ross, a letter describing the disease, now epidemic in Nowgong; and I can only say that the description in no way tallies with anything that I saw, or with any of the reports of cases with which I was furnished. Colonel Ross' report will doubtless be published before this note, so that it will, in no way, forestall it to mention that the disease he has met with, is, he says, an evidently communicable high fever, with great enlargement of the liver and spleen, followed by continuous fever of a non-malarious type; and whereas these "established" cases contained no malarial hæmatozoa, the early acute cases, as a rule, did

so. It is needless to remark that I met with plenty of cases of malarial fever during my stay in Assam, but I certainly saw none at all answering to such a description, nor am I aware that any of my contemporaries in Assam have published or reported any cases at all resembling them; and I am thus reduced to the conclusion that the disease now called kala-azar is something quite different from what was shown me. There would be nothing surprising in this, as I found, at the time of my visit, that illnesses of all sorts, of any severity, were indiscriminately dubbed, by the natives, by the dreaded name.

I may add that I have since met with, in other parts of India where anchylostomiasis occurs, cases indistinguishable from the kala-azar I had to deal with in Assam and equally intractable.

6.—*Dr. Powell's estimation of the number of ova found in the dejecta in cases of anchylostomiasis.*—I can only say that I regard the computation he defends in his paper as a most moderate one.

A Miquoy of Hospital Practice.

MULTIPLE VESICAL CALCULI IN A CHILD.

BY ASST.-SURGEON J. B. KARANDIKAR,

Pandharpur.

A Hindu Maratha boy, aged eight years, was admitted suffering from stone in the bladder for the last five years, and during the last six months great rectal tenesmus and prolapsus ani. Urine contains albumen. Presence of stone easily detected by a sound, and rectal examination reveals two stones, one larger and one smaller, at the base of the bladder. He had been operated upon about two years ago when a stone of the size of a betel-nut was removed.

Operation.—By lateral lithotomy six stones were removed, most of them being embedded in a pouch. The boy was put under chloroform and the bladder opened in the usual way for lateral lithotomy. As the stones were all packed close in the bladder, there was considerable difficulty in catching them as there was very little room for the passage of the blades of the forceps and opening them. Attempts made to hook and remove the smaller stone with the finger having failed, the opening in the bladder was enlarged slightly downwards over the bigger stone, and at last this stone was caught and removed by the forceps. After all the stones were removed and the bladder found quite clear of them, it was washed out with warm dilute carbolic lotion. The stones weighed 1oz. and 3 drachms. He recovered readily.

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THE RADICAL CURE OF HERNIA.

WHEN the open method of operating for the radical cure of hernia was first introduced, the comparative ignorance which then existed in regard to the etiology of the affection led to an over-sanguine estimate of the value of the operation. It was believed that in this operation we had a certain cure for all cases of hernia, and operations were undertaken indiscriminately in all varieties of the affection. After the lapse of some years it became evident that many cases had undergone relapse, and that the ultimate result of many of the early cases was extremely unsatisfactory.

These facts, as is well known, resulted in a reaction unfavourable to the operation, which became, for a time, very much discredited, and the effects of this reaction cannot be said to have as yet entirely passed away.

great divergence of opinion which exists regarding the principles upon which the operation should be based and the multiplicity of the methods which have been devised for its execution.

The list of these operations has already become a formidable one, and threatens to become still more so.

The sceptic, not unreasonably, declines to acknowledge the soundness of an operation which calls for such frequent modifications, and one upon the principles of which so much divergence of opinion still exists. However this may be, the recent reports of some of our most experienced surgeons show that, in suitable cases, the operation is one of great utility, and that large numbers of persons are permanently and completely cured of this troublesome and dangerous affection by means of operation. The publication of these reports has tended, in a great measure, to restore confidence in the operation, and has shown that success depends not entirely upon the particular procedure adopted, but also to a great extent upon a careful selection of cases, and a rigid attention to the preservation of asepsis.

Much of the discredit, into which the operation fell, was due to the indiscriminate manner in which it was formerly resorted to. The fact is not always sufficiently recognised that, in many cases of hernia, the actual exciting cause plays so important a part in the production of the affection, that unless some means be adopted to remove the former, operative measures are not likely to be successful.

A few years ago Mr. Stanmore Bishop, in an important article on the etiology of hernia, drew special attention to the importance of this subject in relation to the question of operation. If greater attention were paid to the causation of particular cases of hernia there would be fewer failures.

Another stumbling block in the way of this operation has been the great diversity of opinion which exists in regard to the principles upon which its execution should be based. That there should be different methods of procedure is not unnatural, but that there should be so great a divergence of opinion as to the principles upon which these procedures are based is extraordinary.

We have on the one hand those who, like Ball of Dublin, maintain that the treatment of the peritoneal stratum of the abdominal wall alone is of importance, whilst the condition of the muscular portion is of no significance. On the other hand we have those, certainly a majority, who consider that the treatment of the muscular portion of the abdominal parietes requires as much care and consideration as that of the peritoneal portion. Mr. Ball, who has recently published an account of a modification of his method of operation, goes so far as to say that in inguinal hernia, all that is necessary is to efface the sac and "funnel-shaped depression" which leads to it, and that no attention need be paid to the condition of the muscular portion of the abdominal wall. On the other hand, in the operation of Macewen and Bassini, the treatment of the two portions of the abdominal parietes receive equal attention.

We must confess to a difficulty in understanding the position of those surgeons who ignore the more careful and complete restoration of the abdominal wall, such as is effected in the operations of Macewen and Bassini.

The methods adopted by these two surgeons appear to have, at the present time, attracted a greater amount of attention than those of

other surgeons, and have found a larger number of imitators. The importance of a flaw in the musculature of the abdominal wall, such as that resulting from a laparotomy, or from the removal of a tumour, or the healing of an abscess cavity, and the liability of such a condition to be followed by hernia, is probably fully recognised by those who do not admit that a flaw of a more serious description situated in the inguinal region is of any consequence.

There is one point regarding the operation for the radical cure of hernia that does not appear to have received that attention which its importance merits. We refer to the method of dealing with the prolapsed omentum in cases of epiplocele.

It is a matter of experience that in a great number of cases of recurrent hernia the contents of the sac have been found to consist largely, if not entirely, of omentum, and there is strong reason to believe that the mass of omentum 'itself' has been the chief factor in bringing about a return of the hernia. In cases of inguinal hernia, whatever method of operation may be adopted, an opening must be preserved for the transmission of the cord, and into this opening before long a small portion of omentum insinuates itself, and by its wedge-like action gradually leads to the re-descent of a larger mass.

The moral to be deduced from this fact is that in cases where a portion of omentum forms a part of the contents of a hernial sac, it should invariably be removed. If this were done as a routine practice, relapses would be less frequent. All surgeons appear to agree that whatever method of operation be adopted, primary union of the wound is essential to success. If suppuration occurs, the resulting cicatricial tissue appears slowly to yield to the pressure within. It is most unfortunate that this operation is so liable to be followed by deep-seated suppuration. An indefinite number of sutures of varying material may be introduced into the abdominal cavity with impunity, and are seldom heard of again. Yet when sutures of a similar nature are used in operation for the radical cure of hernia, they not unfrequently induce suppuration. Various explanations have been given to account for this unfortunate complication. That it is not necessarily due to a sceptic condition of the ligature appears certain; that it is often the result of excessive tension is extremely probable.

THE SERVICES IN 1898.

THE most important events in the history of the Military Medical Services in 1898 were the grant of military titles and the formation of the Army Medical Staff into the Royal Army Medical Corps. This alteration was notified in the *London Gazette* of 19th July 1898; while the grant of military titles to the Indian Medical Services was notified in the *London Gazette* of 16th August 1898, and in the *Gazette of India* of 24th September 1898.

In the War Office Army List the Royal Army Medical Corps is now entered immediately after the Army Service Corps; not, as formerly, after the Indian Staff Corps and Royal Marines. Officers holding the rank of Surgeon-General are now shewn as "Army Medical Staff," all officers below that rank as Royal Army Medical Corps. The officers holding the rank formerly entitled Brigade-Surgeon-Lieutenant-Colonel are still shewn separately, above the other Lieutenant-Colonels, as "Lieutenant-Colonels under article 362 of the Royal Warrant;" and promotions to this rank, which carries a higher rate of pay, are still being formally gazetted. As, however, the title of rank remains the same, all such promotions, subsequent to the abolition of the title of Brigade-Surgeon-Lieutenant-Colonel, have been omitted in the accompanying tables.

Medical officers of the Household troops are now shewn with their respective regiments. The names of those above the rank of Captain, are not shewn in the R. A. M. C., and they still keep the old titles, from Brigade-Surgeon-Lieutenant-Colonel to Surgeon-Major. Those officers only attached for duty, Captains and Lieutenants, are shewn both in the R. A. M. C. and in their respective regiments.

Retired officers temporarily employed are given the new titles in the Army List, whether liable to recall or not.

Officers of the R. A. M. C. on temporary half-pay are no longer shewn separately at the foot of the list of the corps, but in the general list of "unemployed officers on the active list."

The Staff at Headquarters have now been assimilated in designation to the other branches of the Headquarters Staff of the army. The "Professional Assistant to the Director-General" becomes Deputy Director, and the remainder of the staff consisting of an Assistant Director and two Deputy Assistant Directors.

Among the best known of the retired officers who have died during the year 1898 are—of the R. A. M. C., Surgeon-Generals W. S. Murray, S. Currie, S. Fuller, A. Smith and J. Inkson; of the Bengal Medical Service, Surgeon-Generals John Murray, J. Irving, and J. F. Beatson, Deputy Surgeon General S. B. Partridge, and Brigade-

THE SERVICES IN 1898.

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Surgeon J. E. T. Aitchison; and of Madras, Surgeon-General W. C. Maclean, for long Professor of Military Medicine at Netley. Of the honours bestowed for the Indian Frontier and Soudan campaigns, a fair share has fallen to the Medical Services.

I.—BENGAL.

A.—Deaths.

Rank.	Name.	Date.	Remarks.
Surgn.-Lt.-Col.	F. C. Chatterjee	... 11 Sept.	Azamgarh.
Surgn.-Capt.	A. W. Russell	... 22 June	Bareilly, heat-stroke.
Surgn.-Lt.	H. A. D. Dickson	... 27 Jany.	Sandgate.

B.—Retirements.

Rank.	Name.	Date.	Remarks.
Dir.-Genl.	J. Cleghorn, C.S.I.	... 25 October.	
Surgn.-Col.	Sir G. Thomson, K.C.B.	... 6 July.	
B.-S.-Lt.-Col.	Sir G. King, K.C.I.E.	28 February.	
"	Sir A. S. Lethbridge, K.C.S.I.	1 April.	
"	D. D. Cunningham, C.I.E.	... 26 June.	
"	F. A. Smyth	... 27 July.	
"	J. O'Brien	... 19 August.	
"	A. Crombie	... 7 April.	
S.-Lt.-Col.	K. P. Gupta	... 27 June.	
"	G. Price	... 16 January.	
"	O. Baker	... 6 July.	
"	J. Moerhead	... 23 May.	
Lt.-Col.	W. Conry	... 28 November.	
"	M. O'Dwyer	... 30	"

C.—Promotions.

Old Rank.	Name.	New Rank.	Date.	Remarks.
Surgn.-Maj.-Genl.	R. Harvey, C.B., D.S.O., Dir.-Genl.	25 Oct.	v. Cleghorn, R.	
Colonel	L. D. Spencer, C.B., Surgn.-Genl.	25 Oct.	v. Harvey, P.	
B.-S.-Lt.-Col.	T. H. Hendley, C.I.E., Surgn.-Col.	2 April	v. Thomson, T.E.	
Surgn.-Lt.-Col.	D. N. Martin	B. S. Lt.-Col.	28 Feb.	v. King, R.
"	R. L. Dutt	"	1 April	v. Lethbridge, R.
"	J. Duke	"	2	v. Hendley, P.
"	J. McConaghey	"	7	v. Crombie, R.
"	E. Palmer	"	28 June	v. Cunningham, R.
"	H. Hamilton	"	20 May	Special, for Tirah.
Surgn.-Major	T. Grainger	Surgn.-Lt.-Col.	20	Special, for Tirah.

D.—Honours.

Rank.	Name.	Honour.	Date.	Remarks.
Dir.-Genl.	J. Cleghorn, C.S.I.	Q. H. S.	5 Oct.	v. Partridge, D.
Surgn.-Maj.-Genl.	R. Harvey, D.S.O.	C. B.	24 May	
Surgn.-Col.	G. Thomson, C.B.	K. C. B.	20 May	Tirah.
"	B. Franklin, C.I.E.	Q. H. P.	23 Mar.	v. Cornish, D.
"	G. McB. Davis, D.S.O.	C. B.	20 May	Tirah.
B.-S.-Lt.-Col.	G. King, C.I.E.	K. C. I. E.	1 Jan.	
Surgn.-Lt.-Col.	S. J. Thomson	C. I. E.	1 Jan.	
Surgn.-Major	J. Shearer	D. S. O.	20 May	Tirah.
Surgn.-Capt.	J. Fisher	"	"	"
"	W. Selby	"	"	"
Surgn.-Lieut.	J. H. Hugo, I.M.S.	"	"	"

E.—Deaths of Retired Officers.

Rank.	Name.	Date.	Remarks.
L.-G.	F. Anderson	... 10 Feb.	
S.-G.	J. Murray	... 27 July	Sherringham.
"	J. F. Beatson, C.I.E.	29 July	London.
"	J. Irving	... 3 May	Clifton.
"	W. H. Adley	... 18 June	
D.-I.-G.	D. Macrae	... 14 Dec.	Port Bannatyne.
D.-S.-G.	D. Young	... 18 June	
"	A. L. Bogle	... 23 May	St. Leonards.
"	F. M. Clifford	... 15 June	London.
"	S. B. Partridge,	...	
"	C.I.E.	... 7 May	"
Surgn.-Col.	J. C. Morice	... 23 June	"

Rank.	Name.	Date.	Remarks.
Brig.-Surgn.	G. M. Govan	... 1 April	Almora.
"	J. E. T. Aitchison,	...	
"	C.I.E.	... 30 Sept.	[biliary calculus.]
"	J. McN. Fleming	... 31 Aug.	
B.-S.-Lt.-Col.	H. Johnstone	... 11 Dec.	Southsea.
Surgn.-Major	C. Lowdell	... 29 May	St. Leonards.
"	L. E. Eades	... 12 Nov.	
Surgeon	J. Davenport	... 16 March	Guernsey.
"	R. Moodie	... 7 March	Edinburgh.
"	A. J. Wall	... 29 April	Guildford.

II.—MADRAS.

A.—Deaths.

Rank.	Name.	Date.	Remarks.
B.-S.-Lt.-Col.	P. N. Mookorjee	... 14 July	Sagaing, carbuncle.
Lt.-Col.	T. Mayne	... 27 Oct.	Melbourne.

B.—Retirements.

Rank.	Name.	Date.	Remarks.
Surgn.-Col.	S. B. Hunt	... 1 March.	
Colonel	D. F. Bateman	... 31 Oct.	
Lt.-Col.	F. H. Blenkinsop	... 29 Dec.	
Surgn.-Lt.-Col.	J. F. Fitzpatrick.	9 July.	
"	J. Backhouse	... 1 July.	
"	J. J. Moran	... 10 Oct.	
Surgn.-Capt.	G. C. Hall	... 12 March	T. H. P. 12 Mar. '96.
"	J. P. Morton	... 21 June	On T. H. P.; F. P. 7 Nov. '98.
Lieut.	E. Le F. Payne	... 3 Nov.	On T. H. P.

C.—Promotions.

Old Rank.	Name.	New Rank.	Date.	Remarks.
B.-S.-Lt.-Col.	D. Sinclair	Surgn.-Col.	1 March	v. Hunt, R.
"	A. M. Branfoot	"	1 March	v. Sinclair, P.
"	W. E. Johnson	"	1 July	v. Bateman, T. E.
Surgn.-Lt.-Col.	H. F. Esmonde	B.-S.-Lt.-Col.	1 Oct.	v. North, D.
"	White	"	1 Oct.	v. North, D.
"	W. R. Browne	"	1 March	v. Sinclair, P.
"	A. H. Leapingwell	"	1 March	v. Branfoot, P.
"	H. Allison	"	1 July	v. Johnson, P.
"	T. J. H. Wilkins	"	14 July	v. Mookorjee, D.

D.—Honours.

Surgn.-Maj.-Genl.	G. Bidie	Q. H. S.	Feb.	v. Carter, D.
(Retired)				(Retired).
Surgn.-Maj.-Genl.	C. E. McVittie	Q. H. P.	25 March	v. Moore, D.
B.-S.-Lt.-Col.	A. M. Branfoot	C.I.E.	24 May.	

E.—Deaths of Retired Officers.

Rank.	Name.	Date.	Remarks.
Surgn.-Genl.	W. C. Maclean, C.B.	... 10 Nov.	Sidmouth.
"	H. Young	... 18 June	London.
"	W. Johnston	... 24 July	Cheltenham.
D. I. G.	J. Pringle	... 23 Aug.	
D. S. G.	W. Evans	... 21 Feb.	Ladley, Hants.
"	J. Houston	... 25 Dec. '97	Edinburgh.
Surgn.-Maj.	J. P. McDermott	... 21 Nov.	

III.—BOMBAY.

A.—Deaths.

Rank.	Name.	Date.	Remarks.
Colonel	R. Caldecott	... 29 Sept.	London.
B.-S.-Lt.-Col.	W. A. Barren	... 8 June	"

B.—Retirements.

Rank.	Name.	Date.	Remarks.
B.-S.-Lt.-Col.	J. Arnott	... 1 April.	
Surgn.-Lt.-Col.	D. N. Parakh	... 14 March.	
"	H. McCalman	... 13 Feb.	On T. H. P.

Rank.	Name.	Date.	Remarks.
Surgn. Lt.-Col.	H. Masani	... 16 Jan.	
"	J. H. C. Peacocke	... 14 May.	
Lt.-Col.	P. J. Damania	... 28 Oct.	
Major	M. B. Braganza	... 15 Sept.	
"	A. L. Ferguson	... 8 Sept.	
Capt.	W. Carr Sprague	... 29 Oct.	

C.—Promotions.

Old Rank.	Name.	New Rank.	Date.	Remarks.
Lt.-Col.	W. McConaghy	.. Colonel	29 Sept.	v. Caldecott, D.
Surgn.-Lt.-Col.	A. H. C. Dano	.. B. S. Lt.-Col.	1 April	v. Arnott, R.
"	J. P. Greany	.. "	9 June	v. Barren, D.

D.—Honours.

Rank.	Name.	Honour.	Date.	Remarks.
Surgn.-Maj.	F. F. MacCartie	... C. I. E.	1 Jan.	

E.—Deaths of Retired Officers.

Rank.	Name.	Date.	Remarks.
I. G.	J. E. Mayer	... 3 Dec.	
Surgn.-Col.	R. Bowman	... July	Armagh.
Surgn.	J. W. Reynolds	... 6 Nov.	Birkenhead.

IV.—ROYAL ARMY MEDICAL CORPS.

A.—Deaths.

Rank.	Name.	Date.	Remarks.
Surgn.-Col.	J. Williamson	... 21 June	Lucknow, cholera.
Lt.-Col.	J. Ring	... 16 Oct.	Pindi, heart-disease.
"	J. Powell	... 17 Dec.	P. & O. S. S. "Simla" in Mediterranean, tetanus.
Major	W. Kelly	... 29 Dec.	Leeds.
"	G. S. Cardew	... 17 Aug.	Murree, cerebral hemorrhage.
Surgn.-Capt.	E. C. Corcoran	... 23 Feb.	Okuta, Lagos—fever.
"	A. J. Lattey	... 4 Jan.	Calcutta.
Capt.	W. W. Smith	... 12 Nov.	Margato.
Surgn.-Capt.	J. Walker	... 21 March	Jacobabad, pneumonia.

B.—Retirements.

Rank.	Name.	Date.	Remarks.
Surgn.-Maj.-Genl.	T. Walsh	... 29 May.	
Surgn.-Genl.	A. A. Gore	... 1 Dec.	
"	J. B. Hamilton	... 3 Oct.	
"	W. J. Maxham	... 3 Aug.	
Surgn.-Col.	W. Graves	... 13 June.	
Colonel	F. B. Scott	... 9 Dec.	
"	C. F. Pollock	... 7 Sept.	
Lt.-Col.	A. Anderson	... 1 Oct.	
B.-S.-Lt.-Col.	A. A. Macrobin	... 13 April.	
"	L. A. Irving	... 6 April.	
Lt.-Col.	R. H. Robinson	... 16 Oct.	
Surgn.-Lt.-Col.	W. A. Parker	... 23 Feb.	
"	H. L. Donovan	... 23 Feb.	
Lt.-Col.	N. Lender	... 23 Nov.	
Surgn.-Lt.-Col.	J. Tidbury	... 13 June.	
"	A. A. Lyle	... 23 Feb.	
"	H. A. H. Charlton	... 23 Feb.	
Lt. Col.	J. Stevenson	... 2 Nov.	
"	K. S. Wallis	... 23 Nov.	
"	A. S. W. Young	... 2 Nov.	
Surgn.-Maj.	A. Harding	... 10 June	On T. H. P. Retired 7 Sept. '98.
Major	J. E. Nicholson	... 20 July.	
Surgn.-Maj.	J. McM. Bolster	... 4 March.	On T. H. P.
Major	J. H. Nicholas	... 27 July.	
Surgn.-Major	H. E. W. Barrington	... 22 Jan.	
"	P. J. Nealon	... 11 May.	[T. H. P. 5 May '97.]
"	E. D. Farmar Bringham	... 2 April	
"	J. P. Myles	... 23 March	
Surgn.-Capt.	H. V. Dillon	... 16 Nov.	

Rank.	Name.	Date.	Remarks.
Surgn.-Capt.	R. A. Bostock	... 25 May	Scots Guards.
Capt.	W. G. P. Graham	14 Sept.	

C.—Promotions.

Old Rank.	Name.	New Rank.	Date.	Remarks.
Surgn.-Col.	W. J. Maxham	Surgn.-Maj.-Genl.	20 May	v. Walsh, R.
"	W. A. Catherwood	"	3 Aug.	v. Maxham, R.
Colonel	W. D. Wilson	Surgn.-Genl.	3 Oct.	v. Hamilton, R.
"	W. S. M. Price	"	1 Dec.	v. Gore, R.
B.-S. Lt.-Col.	J. F. Supple	.. Surgn.-Col.	29 May	v. Maxham, P.
"	J. H. Moore	"	13 June	v. Graves, R.
"	R. de la C. Corbet	"	22 June	v. Williamson, D.
Lieut.-Col.	C. F. Pollock	.. Colonel.	3 Aug.	v. Catherwood, P.
"	W. H. Macnamara	"	7 Sept.	v. Pollock, R.
"	J. Fraser	"	3 Oct.	v. Wilson, P.
"	T. J. Galloway	"	15 Nov.	v. Special, for Omdurman.
"	A. W. Duke	"	1 Dec.	v. Price, P.
"	J. M. Beamish	"	9 Dec.	v. Scott, R.
Surgn.-Lt.-Col.	W. B. Miller	.. B.-S.-Lt.-Col.	6 April	v. Irving, R.
"	G. D. Bourke	"	13 April	v. Macrobin, R.
"	H. Charlesworth	"	29 May	v. Supple, P.
"	J. C. Dorman	"	13 June	v. Moore, P.
"	G. H. LeMottée	"	22 June	v. Corbett, P.
Surgn.-Maj.	H. R. Whitehead	Surgn.-Lt.-Col.	20 May	v. Special, for Tirah.
Major	G. W. Robinson	Lt.-Colonel.	15 Nov.	v. Special, for Omdurman.
Surgn.-Capt.	C. H. Burtchael	Surgn.-Maj.	20 May	v. Special, for Tirah.
"	J. J. Gerrard	"	20 May	v. Special, for Tirah.
Captain	R. H. Penton	D.S.O. Major.	20 Nov.	v. Special, for Omdurman.
"	H. E. H. Smith	"	20 Nov.	v. Special, for Omdurman.
Lieut.	E. W. Bliss	Captain.	20 Nov.	v. Special, for Omdurman.

D.—Honours.

Rank.	Name.	Honour.	Date.	Remarks.
Surgn.-Maj.-Genl.	S. A. Lithgow	C.B.		
"	(Retired)	.. Q. H. P.		v. Currie, D.
Surgn.-Genl.	W. Taylor	.. G. B.	15 Nov.	v. Omdurman.
Surgn.-Col.	E. Townsend	.. C. B.	20 May	v. Tirah.
Colonel	W. H. Macnamara	C. B.	15 Nov.	v. Omdurman.
Lieut.-Col.	W. E. Saunders	.. C. B.	20 May	v. Tirah.
B.-S.-Lt.-Col.	C. H. Swayne	.. D. S. O.	20 May	v. Tirah.
Surgn.-Col.	J. G. Rogers	C.M.G.		
"	(Retired)	.. K. C. M. G.	24 May.	
Lt.-Col.	G. A. Hughes	.. D. S. O.	15 Nov.	v. Omdurman.
Major	E. M. Wilson	.. D. S. O.	15 Nov.	v. Omdurman.
"	H. B. Mathias	.. D. S. O.	15 Nov.	v. Omdurman.
Captain	R. H. Penton	D.S.O. Osmanieh	3 Oct.	(4th Class).
"	C. S. Spang	.. D. S. O.	15 Nov.	v. Omdurman.
"	P. H. Whiston	.. Medjidie	3 Oct.	(4th Class).
"	C. C. Fleming	.. D. S. O.	17 Dec.	v. Soudan.
Surgn.-Capt.	T. H. J. C. Goodwin	D. S. O.	20 May	v. Tirah.

E.—Deaths of Retired Officers.

Rank.	Name.	Date.	Remarks.
Surgn.-Genl.	S. Fuller	... 7 Feb.	... Bideford.
"	A. Maclean	... 18 Feb.	... Thurso.
"	S. Currie, C.B.	... 25 March	... London.
"	A. Smith, C.B.	... 25 Nov.	... London.
"	W. S. Murray	... 27 March	... Colchester.
Surgn.-Maj.-Genl.	J. Inkson	... 9 Sept.	... Acton.
D. I. G.	J. T. O. Johnstone	... 11 Feb.	... Ryde.
"	W. B. Bawtree	... 13 Aug.	... Mistle Hall, Essex.
D. S. G.	W. O. Mackenzie	... 26 Jan.	... London.
"	E. J. Magrath	... 5 Feb.	... Norwood.
"	W. Homphill	... 20 Feb.	... Southend.
"	J. R. M. Lewis	... 13 Aug.	... Kingston.
Brig.-Surgn.	J. G. Leask	... 16 Jan.	... London.
"	D. C. McFall	... 8 Feb.	... Warrington.
"	J. Johnston	... — March	... London.
"	H. G. Gillespie	... 22 March	... Richmond.
"	F. B. Baker	... 16 Aug.	... [Grenadier Guards] Weybridge.
"	F. Pennington	... 4 Nov.	... Lugano.
Surgn.-Lt.-Col.	R. W. Troup	... 23 March	... Dover.
"	T. Murtagh	... 29 March	... West Brighton.
"	B. W. Fowler	... 24 April	... St. Helena.
Surgn.-Maj.	E. F. Smith	... 10 Aug.	... Kilkenny.
"	R. T. Buckle	... 7 Sept.	... ..
Asst.-Surgn.	O. B. Smith	... 13 May	... Clifton.

D. G. C.

Current Topics.

ITALIAN PLAGIARISM IN MALARIAL PATHOLOGY.

WE would direct our readers' especial attention to a translation which appears on another page in this issue of the recent 'preliminary note' published by Drs. Grassi, Bignami and Bastianelli entitled "Further Researches upon the Cycle of Human Malaria in the body of the Mosquito." It is dated Rome, December 22nd, 1898. These pathologists have cultivated both æstivo-autumnal and spring tertian parasites in the *anopheles claviger*—a dapple-winged mosquito. The first they followed right through to both germinal threads and black spores, and found the threads in the salivary gland just as Ross did last year in the case of proteosoma. Tertian they seem not to have prospered with to the same extent, but the research proves once more the theory of infection of malaria by mosquito bites.

It is an important note and confirms in every way the discoveries made by Major R. Ross, I.M.S., with regard to proteosoma (*Iabbé*) in grey mosquitos (see *Indian Medical Gazette*, September, November, December 1898, and January 1899); and his assertion that the same would be found to be the case in human malaria. In 1897 Ross traced æstivo-autumnal fever in man into the dapple-winged mosquito and a comparison of the reports already printed in our columns and the present note of Messrs. Grassi, Bignami and Bastianelli will convince any one that these observers have followed Dr. Ross in every detail of his research and have arrived at the same conclusions. Yet how do they acknowledge their indebtedness? merely as follows:—'The observations reported up till now permit us to reconstruct the life cycle of the human hæmosporidia in the body of the *anopheles claviger*: it finds for the most part confirmation in that observed by Ross regarding the proteosoma of birds in the grey mosquito.' The italics are ours. Could there have been meaner attempt made to make out that their discoveries were entirely their own? When every step was most evidently inspired by Ross's work from start to finish, yet we have only the acknowledgment that their results 'find confirmation' in Ross's observations. In connection with this really bare-faced attempt to filch all the credit from Ross to themselves, we must remember the following facts: (1) that Ross followed the æstivo-autumnal parasite into dapple-winged mosquitos—observations published in *British Medical Journal*, December 18th, 1897, February 28th, 1898, and *Indian Medical Gazette* Vol. XXXIII; (2) that Grassi, Bignami and Bastianelli were supplied with specimens of proteosoma (in the mosquito) prepared by Major Ross, as well as with publications of his work

and his reports before they carried out their recent research; and (3) that the *anopheles claviger* is a dapple-winged mosquito, which it is allowable to presume directed their attention to it.

We commented on this subject in our January issue, and now that the paper in question is before our readers, we believe they will agree with us in condemning the use of such ignoble methods by men of science. If truth, honour and justice cannot be found in science, it is indeed difficult to know where else we may expect to find them.

MEDICAL STUDENTS IN BENGAL.

THE number of students, attending the nine medical schools in Bengal, fell off during 1897-98 from 1950 to 1815. The total strength of the Medical College of Calcutta at the beginning of the session was 583, as against 588, 511, 484 and 419 of the four preceding years. Of the students that competed at the various examinations, 41 per cent. were successful against 53.2 per cent. in the previous year.

The number of students in the Campbell Vernacular Medical School, Sealdah, on the 31st March 1898, was 229, of whom 15 were females. Sixty-eight male and 10 female students appeared, for the second or final diploma examination, 56 of the former and 9 of the latter being successful. All the female students, excepting one, who is married, were boarders in the Lady Elliott Hostel. The number on the rolls of the Dacca Medical School, on the 31st March last, was 145, of whom nine were females. Thirty-eight students (one female) succeeded in passing the final examination. The number attending the Temple Medical School, at Patna, on the 31st March 1898, was 136, of whom four were females. Twenty-eight candidates passed at the final examination. In the Cuttack Medical School, the number of pupils on the rolls, on the 31st March 1898, was 99, of whom 4 were females. Thirty-one students passed the final examination.

PLAGUE AND BANANAS.

IN his address to the German Society for Public Hygiene, on July 7th, Professor Koch drew attention to a centre of plague in Africa. Students of the history of plague have heard for some time past of his focus of infection, but no definite statement of any real scientific value has hitherto been forthcoming. It, however, seems certain that in the Hinterland of German East Africa, people have been found suffering from plague. Dr. Zulitza made a special expedition to Kissiba, a district adjacent to the Victoria Nyanza Lake, and there found clinical and bacteriological evidence of the presence of plague. In the case of five persons, who had died from a devastating disease in this region, the blood and lymphatic systems proved that the cause of death

was true bubonic plague. In addition, all the ordinary signs and symptoms of plague were present; 9 out of 10 of the cases died; the disease was communicated to rats and monkeys, and all the usual methods of scientific investigation go to prove that genuine plague prevailed. Hitherto plague was considered never to have reached the equatorial belt; in fact, it was limited to 14 or 16 degrees north of the equator. Uganda is believed to be the region whence the infection spread to Kissiba, and Uganda is situated on the equator itself. Plague is, moreover, held to be endemic in Uganda; the missionaries there having been acquainted with the disease for a long time. This statement is calculated to remove several fallacies into which we had fallen, and the belief that plague could only find a home in the parts of India to the north of 12 degrees of the equator (in other words, the equatorial belt) is shown to be no longer tenable. Professor Koch further states that the banana and the banana plantations are the breeding grounds and the means by which plague is spread, because he observed that in this plague spot in German East Africa, the inhabitants live almost entirely on bananas. The banana-trees grow in thickets, through which light and air can scarcely penetrate, and in the midst of which the inhabitants live. The conditions for the development of special virulence in bacteria would thus seem to be all supplied. There can be no wonder, therefore, that plague, once introduced, has become endemic. That the banana, however, is a chief general means of the spread of the disease will be received with hesitation. Plague exists in countries where banana growing is unknown, and to stamp as pernicious a fruit which is the daily bread of a large section of the human race is a serious matter. Professor Koch holds that plague will not survive the advance of "civilisation." We are not aware what is here meant by civilisation. If it means that plague will not survive good drainage, sanitary surroundings of high perfection, wholesome food, and all the hygienic perfections appertaining to an ideal sanitation, it will be many a year yet before the natives of Uganda or the pigmies in the primæval forest will be able to defy infection. If, on the other hand, civilisation and the introduction of railways are used as synonymous terms, it must be remembered that frequent and rapid communication seems rather to favour rather than prevent the spread of plague. This newly found focus of plague in Africa is of special interest, because the railway to Lake Victoria Nyanza will pass through it and so bring it into communication with the coast.

WHITE BREAD OR BROWN ?

DRS. LAUDER BRUNTON and Tunnicliffe publish in the current volume of the *St. Bartholomew's Hospital Reports*, and summarized in the British

Medical Journal, an instructive communication on the relative digestibility of white and brown bread. On the strength of certain experiments, which they describe in full, they feel justified on concluding that the higher nutritive value which might, on purely chemical grounds, be ascribed to brown bread cannot be maintained from the physiological side. With regard to fats and mineral constituents, on the other hand, distinctly less of the nutritive materials actually get into the blood in the case of brown than of white bread. White bread is, weight for weight, more nutritious than brown. It thus would appear that the preference given by operatives in large towns to white bread has to a certain extent a sound physiological basis. In the case of people with irritable intestines, white bread is to be preferred to brown. In the case of people with sluggish bowels, brown bread may be preferable to white, as it tends to maintain peristalsis and ensures regular evacuation of the bowels. If the proportion of mineral ingredients, and especially of lime salts, in other articles of food or drink be insufficient, brown bread is preferable to white. It is possible that in the case of operatives living chiefly upon bread and tea, the preference for white bread which prevails may be responsible, in part at least, for the early decay of the teeth. An abundant supply of mineral constituents is especially required in pregnant and suckling women and in growing children, in order to supply material for the nutrition of the foetus, for the constituents of the meal and for the growth of the tissues, especially the bones. In such cases, if mineral salts, especially those of calcium, be supplied by other food-stuffs, drinks, or medicines, brown bread is preferable to white. Lastly, Drs. Brunton and Tunnicliffe are of opinion that if the dietary be insufficient in fat, or if the patient be unable to digest fat readily in other forms, brown bread may possibly be preferable to white. The authors rightly dwell on the absurdity of taking the mere chemical composition of a food-stuff as an index of its nutritive value. A stick of charcoal, the atmospheric air, a little water, and some sea salt, contain all the elements of a typical diet, and in ample quantity. Hence it is not always a question of what a food-stuff contains, but how it contains it.

It appears, however, as Dr. Sealy points out, the brown bread experimented upon was the ordinary article of commerce sold under that name, which should not be confounded with genuine whole wheat meal bread properly so called.

The ordinary brown bread is composed, as most people I suppose know, mainly of white dough, to which more or less rough and dark material has been added, not a desirable article of diet for most persons one would think, and as little likely to earn a good character in the human interior as in the laboratory.

On the other hand, whole wheat meal bread if it can be obtained is an entirely different thing, in the stomach of the consumer at all events, however it may behave in the hands of the analytical chemist. Unfortunately, the fondness of the purveyor for the ordinary white dough, an affection founded on reasons perfectly intelligible from his point of view, is almost insuperable, and in very few places only can the genuine alternative be obtained. I have long been familiar with the loaf made from the whole of the grain, ground by means of steel machinery to the necessary degree of fineness, containing no rough particles, the crumbled morsel going readily through what is known as an eighteen mesh sieve. The presence of any spicula or portions which were unable to do this would at once convict the baker of dishonesty. I have subjected this kind of bread to severe practical tests as a sustaining agent in adults, performing considerable muscular and athletic work in this country, as well as in climbers in Switzerland, and the results, when compared with other kinds of bread in common use, have been surprising. I have tested its value as a chief article of diet in promoting growth and nutrition in children in institutions as well as in private families with equal success. Not only has it seemed to be more easy of digestion in itself, but also a great promoter of assimilation all round. I am not able to claim for it, however, any influence as a laxative agent. Of course, it does not, like the over-fermented starch, act as so much glue or gum in the interior, but that is all, and I never find that it has any tendency to promote intestinal irritation, so often associated with the acrid productions of the white variety.

NATIVE PLAGUE REMEDIES.

THE native method of treatment for the plague, in which the people affect to place so much reliance, is a curious blending of sense with ignorance. For instance, a celebrated and justly esteemed Hakim recommends the use of pure water, thorough ventilation and disinfection of dwellings, *mohallahs*, bedding and clothes, with opium, garlic, husk of the chili, ginger, and pounded cummin seed as internal remedies. So far so good, but when we find the same authority extolling the efficacy of the application of a burnt piece of the skin of a black drake to the eye, we ask ourselves, does medical science still survive the practices of the Dark Ages?

WOMEN PHYSICIANS IN EUROPE.

THE first qualified woman physician in Europe, as far as is known, says the *Journal of the American Medical Association*, was a young Athenian woman, named Agnodice. In the year 300 B.C., she disguised herself as a man and began to attend the medical schools at Athens, which it was against the law for a woman to do.

She afterwards practised among the women of Athens with extraordinary success. Her secret becoming known, she was prosecuted for studying and practising medicine illegally. The Athenian women, however, raised so furious an agitation in consequence that the case was dropped and the law repealed. Coming to later times, we find several women who obtained the degree of doctor of medicine and practised in Europe before 1492, especially in the Moorish universities of Spain. Trotula of Rugiero, in the eleventh century, had a European reputation and practised in Salerno. At the beginning of the fourteenth century, Dorothea Bocchi not only received the degree of doctor but was professor of medicine in the University of Bologna. Since then two other women have been professors of medical subjects in the same university, Anna Mangolini (anatomy) and Dr. Maria delle Donne (obstetric medicine), the latter being appointed in 1799. In the year 1311, an edict was issued in France forbidding surgeons and female surgeons from practising until they had passed a satisfactory examination before the proper authorities. These female surgeons are again referred to in an edict in 1352.

HYSTERIA IN THE LOWER ANIMALS.

DR. H. HIGIER of Warsaw, describes in the *Neurologisches Centralblatt* (No. 13, 1898), two instances of what he regards as hysteria occurring in the cat and the canary bird, respectively. The cat, which was nine months old, healthy and active, was one day deeply bitten in the back by a dog and immediately fell down paralysed. When Dr. Higier first saw it, five or six weeks after the injury, it walked only with its fore-paws, dragging its body and hind-paws. There was complete loss of sensation in the hind-paws and in the hinder third of the body, both sides of the abdomen and back of the animal being indifferent to deep punctures with a needle and to hot applications, but it always responded to gentle touching of the anterior half of the body. The tail was also paralysed, but there was no muscular atrophy of the hind limbs in comparison with the anterior part of the body, neither was there incontinence of urine or fæces, in which respect only did the symptoms differ from those of paraplegia intentionally induced by section of the spinal cord. Dr. Higier considered the lesson to be traumatic dorsal myelitis until one day the servant girl, being curious to see whether the cat would fall on all fours as cats usually do, threw it from the first-floor of the house on to the pavement. As a matter of fact, it alighted on all four feet, immediately ran away and was, contrary to expectation, completely cured of its sensory-motor paraplegia, which had lasted for more than two months. Dr. Higier based the diagnosis of hysteria on the sudden onset and equally sudden disappearance of the paralysis, together with the retention of control

over the rectum and bladder. The mother of this cat had repeatedly during the last weeks of pregnancy suffered from general clonic convulsions without loss of consciousness (? chorea gravidarum). Dr. Higier's second case of hysteria showed itself in a canary bird whose cage with the bird in it was pulled down from the wall by a cat, but Dr. Higier interposed before the cat seized it. The bird lay on the bottom of the cage, stiff as if dead, but was revived by sprinkling with cold water, after which it was lively, took its food well, and showed no abnormality except that from having been a fine singer it became silent. After six weeks this condition of aphonia passed off quite unexpectedly, and the canary once more sang very well. Dr. Higier also refers to three cases mentioned by Gilles de la Tourette, in which dogs showed hysterical symptoms.

MEDICAL PRACTICE AMONGST THE MONGOLS.

A FRENCH army surgeon, J. J. Martignon, resident at Pekin, has given an account of Mongolian medicine based on information received from a native who was for a time physician to the living Buddha of Ourga, an important town some 800 miles north-west of the Chinese capital. Medicine among the Mongols is a monopoly of the Llamas. There is a school of medicine at Ourga, where, after a prolonged course of philosophy and Buddhist theology, three years are given to the study of the art of healing. Mongolian medicine is largely derived from Chinese, and, through that, from European medicine as it was two centuries ago. The European strain comes from the old treatises translated into Chinese by the Jesuits in the reigns of the Emperors Kien-Long and Kan-si. Mongols do not dissect, and their knowledge even of the position of the internal organs is vague. The number of diseases is fixed at 440. Works on medicine are very numerous, the chief one being a kind of encyclopædia, entitled "Khlantap," which is divided into eight sections and consists of 156 chapters. Their methods of physical examination are full of marvels. Thus more than seventy varieties of pulse are described. The urine is examined with great minuteness in respect to its color, smell, and clearness, samples passed at many different hours of the day being used. It is also subjected to a kind of auscultation, being beaten with a wooden spatula, and the vessel then quickly applied to the ear. In the case of rich patients the examination is made more thorough by tasting, a procedure which naturally is made the ground of a special charge.

Mongols, like practitioners of former days in Europe, profess to be able to diagnose and treat all sorts of cases on the strength of an examination of the urine alone. The treatment is largely internal, and their pharmacopœia is main-

ly composed of vegetable substances. Every year, in September, the students make excursions under the direction of their teachers, for the purpose of culling samples, which are dried, classified and catalogued. Aromatic plants, such as cinnamon and benzoin, play a large part in their therapeutics. Animal and mineral substances are also used, but to a much less extent. The Mongol doctor carries his drugs about with him. Each medicament, dried and triturated, is put into a small leather bag, which is properly labelled; some practitioners carry as many as three hundred of these bags enclosed in a larger one, or in a box with a spoon to measure the doses. Like the ecclesiastic physicians of the Middle Ages, the Llamas are forbidden to practise surgery, although in cases of crushed limbs or other severe injury necessitating amputation, they may direct a butcher how to use a knife. They practise venesection, however, use poultices for the maturation of abscesses, and vigorous massage for the relief of headache and other pains. Recent wounds are dressed with lichen of the steppes or with deerfat. They use counter-irritation by moxas, acupuncture and ignipuncture, and they practise wet-cupping by means of ox-horns.

Preparations of sulphur and lead are used as applications in diseases of the skin, and bathing in hot sulphur springs, in syphilis. Fish's bile is credited with the power of curing cataract. Human bile, and that of the bear and of the hyena, also frequently enter into the composition of their medical preparations. Mongol doctors seek to restore vigor to old men by the internal administration of ram's testicles. "Organotherapy" is also employed. Thus, the flesh of the sheep is given for vertigo, that of the antelope for diarrhoea, that of the water-rat for nephritis and dropsy, that of the marmot for dysmenorrhœa, that of the beaver for spinal disease and importance; that of the wolf in diseases of the stomach. They are acquainted with the parasiticide properties of mercury, and use it to destroy the vermin with which their countrymen are generally infected. The most prevalent diseases at Ourga are syphilis and skin affections, but typhus, typhoid, malaria, and other fevers are very common. In treating fevers they purge with rhubarb, and when that fails they give enemata or suppositories, the latter being composed of salt and sugar. They also give nux vomica sudorifics, and ginger, and juniper is burnt round about the patient. Cholera is treated chiefly by acupuncture under the nails, on the tongue, and around the anus; and as a last resource by burning the pit of the stomach.

ARE AERATED WATERS SAFE?

It is a common thing to advise travellers to avoid drinking water, on account of the impos-

sibility of guarding against the risk of infection. As an alternative they are advised to take mineral waters, or, should these for any reason be objected to, the ordinary syphon water is recommended. There can be no doubt as to the greater safety of diluting claret with one or other of the natural mineral waters, the conditions under which they are "caped" and bottled precluding all save the most infinitesimal risk of accidental contamination. At the same time, not every person can with impunity make habitual use of waters more or less richly laden with saline constituents, and this brings us to the question whether ordinary aerated waters are equally trustworthy from a hygienic point of view. There is a very general belief that carbonic acid gas under pressure exerts a destructive action on any micro-organisms that the original water may contain, and this belief is by no means confined to the unlearned. It is rather a shock to learn that carbonic acid exerts no such sterilising effect, and that water originally impure retains its pathogenic properties to the full. For this disconcerting information we are indebted to a thoroughly trustworthy Italian investigator, Mr. G. Malfitano, who recently published the results of his researches on the behaviour of micro-organisms in the presence of compressed gases. His report, summarised in the *Medical Press* on the subject of aerated waters, states that no permanent biological modification in the bacteria employed was observed to result from exposure to compressed carbonic acid gas, though the pressure was raised to 55 atmospheres, nor was he more successful when he submitted bacteria to the interrupted action of the gas. The purity of aerated water therefore depends on the care taken by the manufacturers to sterilise the original fluid, obviously a variable and doubtless varying quantity.

STERILIZING EFFECT OF COOKING.

As the result of a considerable amount of experimental work, Vallin (*Revue d'Hygiene*) has arrived at certain conclusions relative to the sterilizing effect of cooking articles of diet. Prolonged boiling is the most favourable means of destroying the pathogenic germs of meat, whether as spores or bacilli. Grilling or roasting of meat in thin slices is not enough to kill spores, but, if carried to an extreme, will destroy bacillary forms. Ordinary cooking in a stove exercises no influence either on spores or bacilli. These conclusions, if confirmed, will be of considerable significance, as demonstrating the importance or eradicating the evil at its source, that is, of preventing the spread of microbial diseases among animals used for human food, rather than of endeavouring to purify the contaminated tissues by the art of cooking.

JAIL HYGIENE.

CAPTAIN W. J. BUCHANAN's valuable booklet on Jail Hygiene, has been found so useful that a second and revised edition, we are glad to hear, is to be published by the Bengal Government, to supply the demand for it from Ceylon, Borneo, the Central Provinces, Assam and other provinces. Dr. Lawrie is contributing a chapter on 'How to give Chloroform?'

DEATH OF MAJOR EVANS, I.M.S., FROM PLAGUE.

WE have to record with the deepest regret the death from Plague of Major John Fenton Evans, I.M.S., M.B., Professor of Pathology and Resident Physician at the Medical College Hospital, Calcutta. Dr. Evans, whose researches on the Plague recently secured him the special thanks of the President of the Plague Commission, as noted in our last issue, was attacked on the 7th March with that disease, contracted either in the *post-mortem* room or whilst treating cases in the wards. He rallied on the 10th, and seemed much better throughout the next day, but sank rapidly and died on the 13th inst. He was buried with military honours the following morning at Bhawanipur, and the very large attendance at the funeral testified in no small degree to the high esteem in which he was held. The coffin, which was borne in a glass hearse, was followed from the Medical College by Colonel Harris and Captain Bird, I.M.S., the nursing staff, and the military students of the college. When the cortege reached the precincts of the jail, it was met by half of a battalion of the Gloucestershire Regiment, commanded by Captain Venables, fifty of whom formed the firing party. Here a very large contingent of Civil and Military Officers assembled and followed the procession, including His Honor the Lieutenant-Governor and staff. His Excellency the Viceroy was represented by Captain Wigram, A.-D.-C., His Excellency the Commander-in-Chief by Captain Beatty, A.-D.-C., Brigadier-General Wodehouse commanding the Presidency District, the Headquarters and District Staffs and all officers off duty in the garrison were present. There were also present the Hon. Mr. Bolton, the Hon. Mr. Finucane, the Hon. Mr. E. N. Baker, Mr. Risley, Colonel Joubert, Colonel Sanders, Major Gibbons, Colonel R. D. Murray, Mr. A. H. James, Mr. Paget, Mr. Bright, Mr. Greer, Dr. Clemow, Dr. Banks, and a large number of members of the medical profession. The fifes and drums of the Gloster Band which headed the procession, as it wended its way to the cemetery, played a funeral march, and on arriving at the cemetery, the coffin, which was removed from the hearse, was covered over with the Union Jack, the helmet and sword being placed on the lid surrounded by numerous floral wreathes and crosses. The charger of the deceased was led behind the hearse. The

Ven'ble Archdeacon Stone read the funeral service, and at its close three volleys were fired.

By his untimely death at the age of 41, the Indian Medical Service loses one of its most promising and popular members. His bright and warm-hearted personality will be much missed by a wide circle of friends. It is to be hoped that no time will be lost in raising a memorial to perpetuate the memory of this able pathologist who heroically battling with the plague, has fallen a victim at his post.

Résumé.

A Treatise on "Unripe" Cataract.—By WILLIAM A. McKEOWN, M.D., M. Ch., Surgeon to the Ulster Eye, Ear and Throat Hospital, Belfast, London: H. K. Lewis, Gower Street, 1898. Illustrated by 9 Plates, containing 60 original drawings. Royal 8vo. 12s. 6d. net.

It is just fourteen years since Dr. McKeown introduced his treatment of immature cataract by intra-ocular injection and irrigation, bringing it to the notice of the profession in his address as President of the Ophthalmological Section of the British Medical Association at Belfast in 1884. Since that time he has used the method in about 700 cases of various kinds, and the present work contains a full account of the operation, a precise statement of the rules for its application and detailed reports of a number of illustrative non-selected cases.

The removal of cataracts that are not usually considered fit for operation, by reason of their not having become completely opaque or 'ripe,' was the object the author had in view, and which he claims to have attained with his method. It consists essentially in separating the lens from its capsule by sub-capsular injection of saline solution, and then washing out the lens matter by intra-ocular injection of the same solution.

All will agree with Dr. McKeown that, in the early stages of nuclear cataract, and in all cases of incomplete cortical cataract (i.e., in all "unripe" cataracts), the removal of the cortex is the crux of the operation. Various methods of dealing with it have been devised, and six are in use.

Three of them may be described as preparatory:—

(1) *Preliminary needling*: This is only applicable in soft cataract in the young.

(2) *Forster's artificial maturation*: This is of limited application and is very often ineffectual, and not infrequently attended by serious accidents, such as dislocation of the lens, iritis, and vitreous prolapse. Moreover, two operations, preliminary iridectomy and trituration, and then

extraction, with sometimes a third for secondary cataract are necessary.

(3) *McKeown's method*: Practised at the time of extraction but before expulsion of the body of the lens. Sterile saline solution is introduced inside the capsule of the lens by a fine hollow needle immediately before the capsulotomy.

The three other methods of dealing with the cortex are applicable *after* expulsion of the body of the lens. They are (4) pressure and friction on the globe by spoon or finger, directly or through the lids. This is useful but limited in its application. Presence of liquid is necessary for it to be effective, and, if the cortex is adherent to the capsule as it generally is in immature cataracts, pressure fails to remove it; (5) the use of a scoop introduced into the eye. This can only safely be used to remove visible cortex. Cortex hidden behind the iris or transparent cortex can only be sought for and removed by the scoop with danger; (6) McKeown's combination of intra-ocular irrigation and massage. This tends to establish the normal relations of the parts, causes the cut and torn ends of the anterior capsule to come forward, searches out and expels cortical remains, and acts not by force alone but by diminishing the cohesiveness and consistence of the cortical substance.

Injection of a liquid inside the lens capsule and irrigation or washing out of cortical remains are therefore the measures advocated by Dr. McKeown, for safely removing immature cataracts. His method of carrying them out has varied little since 1884. After the corneal section and iridectomy, a fine hollow silver needle is introduced superficially under the anterior capsule, and sterile saline solution caused to flow between the capsule and cortex until the unripe lens is opaque and separated from its capsule. Capsulotomy is performed, and the lens expelled in the usual way. Irrigation is then done with the same solution, and the operation is complete. A good light from an electric or acetylene lamp is necessary. The details are fully given in that work before us, and illustrated by some excellent plates. All the cases operated upon are not given. The results of the 152 operations related are very good and prove that in the hands of the author the removal of unripe lenses is a comparatively simple matter. The method requires special instruments not everywhere obtainable and considerable technical skill. This may be acquired or improved with experience, as is indeed shown by the author's statement that, in the early years of his practice of injection and irrigation, he had too frequent prolapses of vitreous, and that for several years, 'owing to greater perfection of the instruments,' prolapse has been rare. If the author had given us tables showing his success in different periods, it would have been useful. The dangers, chiefly from prolapse

of vitreous and iritis, must have been found greater by other surgeons on the method, would have become more popular. Swanzy practising in Dublin does not even mention it in the last edition of his text-book. Fuchs also has nothing to say about it. If others had found it as successful as Dr. McKeown, it is probable we should have heard of its being introduced for the removal of the lens in high grade myopia. There are no more conservative surgeons in the world, however, than ophthalmologists, and with the results now published before us, we can only conclude, that Dr. McKeown's operation has been too hastily condemned, and recommend that it should be given a trial by experienced and unprejudiced ophthalmic surgeons. Any improvement that leads to the saving of years of miserable ever-increasing blindness deserves the most earnest consideration.

In an appendix, the arguments for and against iridectomy in cataract extraction are summoned up in a masterly manner, and the result is a serious indictment against the simple method and a strongly expressed opinion in favour of iridectomy.

The publisher has produced the book in handsome style, with large print and generous margin, while the plates are beyond praise.

On Maternal Syphilis INCLUDING THE PRESENCE AND RECOGNITION of Syphilitic Pelvic Disease in Women. By JOHN A. SHAW-MACKENZIE, M.D. (Lond). J. and A. Churchill, London. Price, 10s. 6d.

THIS is a small book very full of matter, and if one cannot always agree with the author in his desire to sweep all kinds of pelvic diseases into the syphilitic net, one must, at any rate, admit that he argues earnestly for his special views. He starts with the proposition that the "maternal origin of syphilis in the offspring, in consequence of maternal acquired or inherited disease, is more probable in doubtful cases than the paternal origin, and 'syphilis by conception in the mother' which is usually accepted." His reasons are not very convincing; and to accept the whole position, we must suppose that a man in whom no active syphilitic symptoms are actually present can convey a primary disease to any woman with whom he may have connection. Again, apart from other evidence, we cannot be expected to believe that, because any given pelvic trouble is benefited by iodide of potassium and mercury, that the disease is always due to syphilis. The writer tells us that he has "especially drawn attention to the value of such treatment in subinvolution of the uterus after abortion." Might we suggest that such an earnest invitation was hardly necessary; for, apart from artificial interference, the most common cause of abortion is syphilis, and the treatment is from old time. Always, too, can we remember cases

where such treatment has prevented abortion, and enabled a woman to give birth to a fairly vigorous child? The first chapter deals with primary syphilitic disease giving the usual symptoms, and is illustrated by cases which, as regards differential diagnosis, are distinctly "scrappy." On page 19 we find a quotation from Mr. Lee's *Lectures on Syphilis* which cannot be allowed to pass without comment:—It refers to the dangers of syphilitic infection as conveyed by a surgeon: "If in such a case it were ever established that a patient was entitled to recover damages from a medical man, who had unconsciously been the means of communicating the disease, the converse ought, in all justice, to hold, and a medical man ought to be able to recover compensation when infected by a patient; for, under such circumstances, a patient is quite as likely to suspect the existence of syphilis as a surgeon." It is with the last few lines that we feel inclined to join issue. If the surgeon has made the necessary preliminary enquiries before examining the woman, he is probably on guard, but hundreds of cases occur in which the patient has not the slightest idea as to the nature of the disease from which she is suffering. Again, a surgeon who conveys syphilis to a woman during confinement is, in most cases at least guilty of neglect of ordinary aseptic precautions. The difficult questions surrounding 'Colles' Law' are fully discussed, and authorities and cases are quoted against its universal application. It is not possible to take up many of the points in this book, but we cannot accept the writer's views on the syphilitic causation of pyosalpinx. Syphilis does not, strictly speaking, produce acute suppurative conditions, and the majority of cases of pyosalpinx are undoubtedly due to gonorrhœa. On pages 57 and 58, we come across a point of professional morality which admits difference of opinion. We are told, on the authority of Professor Syme, that we must never mention to patient, parent or patient's friends that the disease about which we are consulted is cancer, scrofula (*sic*), or syphilis. As regards parents and friends, we may let this dictum pass; but we hold that the patient should be told exactly what is the matter either in reply to a direct question, or when ignorance may cause the further spread of maladies such as tubercle or syphilis. It is no part of a reviewer's duty to expatiate on the excellencies of any given book, and for the rest we say, without hesitation, that this book is one to be read not only for what it teaches, but for what it leaves for the reader to think over and refute or accept according to his experience. The chapter on treatment is full and good. The book is illustrated with good plates, but we must take exception to the brilliant colouring of the condylomata. They may be sometimes as shewn in Plate II, but the plate does not give their usual appearance.

MEDICAL ZOOLOGY.

FURTHER RESEARCHES UPON THE CYCLE OF HUMAN MALARIA IN THE BODY OF THE MOSQUITO.

PRELIMINARY NOTE BY B. GRASSI, A. BIGNAMI AND G. BASTIANELLI.¹

CONTINUING the study of the cycle of evolution of the malarial parasites in the body of the *Anopheles Claviger Fabr.* (Zanzarone), we have followed two methods.

That is to say, we have examined a great number of mosquitos taken in free life in rooms and huts, where men affected by malarial fevers were sleeping; in these mosquitos were observed various stages of the development of the parasite. From such a study, considering the quantity of material used, we might expect, as indeed turned out to be the case, noteworthy results. Contemporaneously, mosquitos were studied, which were caught in stables and poultry yards, which, deriving their nourishment from the blood of birds and domestic mammals, could control to a certain extent the preceding observations.

The other method was to follow the development of the parasites in *Anopheles*, which were made to sting the malarial patients in the hospital on fixed days and hours. They were systematically dissected day by day, and thus the regular development of the parasite was followed, whilst in other mosquitos which had not stung malarial patients and were held in the same conditions the parasites in question were not observed.

Also by this method our observations were carried out amongst a great number of individuals. The comparison of the results obtained by the two different methods should go to reconstruct the cycle of evolution of the hæmosporidium of human malaria.

The *Anopheles* remain chiefly from about the beginning of November in houses, stables and poultry-yards, without leaving them but on exceptional occasions.²

This was also confirmed in Lombardy, where this stationary condition lasts from the beginning of September. The mosquitos in the Roman Campagna continued to sting, whilst in Lombardy their stinging became more and more rare.

In these conditions the females³ stationary in the dwellings of malarial persons must have been much infected, and those in the stables and poultry-yards must have been for the most part

uninfected. We gathered this from the fact that when mosquitos were abundant it was difficult to find any infected ones, so much so that one of us, Grassi, could not find one amongst all the dissections he made at Locate Triulzi.

Conformably to our induction the percentage of infected mosquitos collected in certain malarial dwellings increased up to 75%, whilst we have not yet found one infected mosquito¹ from those taken either from a stable or from a poultry-yard; but this should also be taken in connection with the circumstance that the infected mosquito frees itself from the parasites. (See below).

As has been said, in the *Anopheles* caught in dwellings, we have been able to see all the phases of development of the hæmosporidium. In order to shorten the description, we shall relate together the results of these observations along with those obtained from methodical culture.

The cultures were made by putting the mosquito immediately after the puncture into an incubator of a temperature of 30° c. (86° F.). A series of observations dating from the first days of November makes us suspect that at the temperature of 14—15c. (c. 57—59 F.) (outside temperature) in the early hours after puncture, the development of the hæmosporidium was not possible.

There is certainly a development in the mosquitos at a temperature of 20—22 (68—71·6 F.), but it proceeds more slowly than at 30°c. (86° F.), and the examination of the insects become more difficult because they free themselves from the blood more slowly. Therefore our results respecting the time, to which the particular phases after puncture refer, are those that have been obtained in the *Anopheles* at 30°c. (86° F.) in an incubator.

With regard to the summer-autumn fevers, we have already said in a preceding note that the forms of the crescent phases of man develop themselves further in the *Anopheles*.

In order that the development of the crescents may take place, it is necessary that they should be mature, we only meet with positive results while examining the blood in which are found forms of the semi-lunar phase, which transform rapidly into round bodies and become flagellated; it may be affirmed that when these forms are quite mature, one obtains a constant development of them in the new host.

Whatever may be the method of penetration of the crescent into the walls of the middle intestine, and what phases may be rapidly passed through before penetrating these, is not the subject of this note: we shall occupy ourselves with it in an early work.

¹ Translated from the original paper in *Reudiconi della R. Accademia dei Lincei*, 22nd December 1898.

² In the houses are found, however, almost only females. The ovaries are very backward in their development in the greater number of cases. The females feed on blood; on one occasion only one was found that had in the intestine grains of chlorophyll.

³ It was noticed that the females continued to feed at intervals of about two days, if the temperature was about 30°c. (86° F.) without the ovaries maturing.

¹ Exception must be made in the case of spores being found (brown bodies) of this afterwards.

After two days we saw in the middle intestine between the muscular fibres subrotund bodies, either ovoids or more rarely round, furnished with capsules (hæmosporidium in course of development).

The pigment one recognises as identical with that of the crescent: it remains near the periphery in rather large masses: which frequently appear disposed in two parallel lines; in the middle of each line are the larger masses. In the fresh state the hæmosporidium is very transparent, with signs of vacuoles.

After four days the parasites have increased in size, the vacuolated appearance is more evident: the pigment seems less in quantity and is dispersed here and there.

After six days the parasites are enormously increased in size; they remain in the thickness of the middle intestine, forming herniæ which had already begun in the previous stage, into the cavity of the cœlum, from which the external tunic there separates from the middle intestine, apparently structureless (anista). They can also be well seen through lenses of slight magnifying power (objections 4—6 Leitz). Very numerous little bodies are distinguishable; the pigment is diminished. We note also the fatty look of the shining corpuseles, which in part already existed in the preceding stages.

After seven days the parasite contains an enormous number of filaments disposed in rays around several centres; the filaments are about fourteen feet long, and are extremely delicate. In some individuals one clearly distinguishes a homogeneous distinct mass, in others two to three are distinguishable, finally sometimes one does not succeed in seeing any. Pigment still remains: it is in the distinct mass just indicated. When these parasites are crushed the filaments escape.

If the particular forms described up to now are studied by cytological methods, it is easy to persuade oneself that we are confronted by a sporozoon, the various phases of which we follow up to maturity. The process has been met with in many other forms of sporozoon and consists essentially in the augmentation of volume accompanied by incapsulation and by multiplication of the nucleus which ends (sixth day) by finding itself divided into very numerous and extremely minute nuclei, around which is disposed a little protoplasm (sporoblasts without capsules) having a residue unsegmented (*nucleus de reliquat*).

The sporoblasts transform themselves directly into as many sporozoites very delicate, thread-like attenuated at the ends about fourteen feet long.

The matured sporozoon (seventh day) is constituted by a delicate capsule of innumerable sporozoon and of the residua of segmentation.

In the succeeding days the ruptured flaccid capsules are still found adhering to the intes-

tine, and near them the sporozoites; they disperse themselves throughout the cœlum. Later they are collected as an accumulation in enormous numbers only in the tubes composing the salivary glands: here they remain, either inside the cell, or in the spaces bounded by them.

At this stage capsules are still found in the intestine, on the residua of them, but in some individuals nothing is found. It is permissible to assume that in this last case the capsules have been re-absorbed.

The sporozooids, when they are still in the capsules appear immobile as also in the salivary glands: in one case, however, whilst they were dispersed in various parts of the body they were seen to be mobile.

For the common *tertian* (*spring*) our observations are less advanced: up to now we have followed the development of the hæmosporidium only up to the fifth day. The study of the tertian presents great difficulties because the mature and non-sporulating forms which are those that develop themselves in the *Anopheles* are not found in the blood in such great number as are the crescent forms; so that they find in the mosquito is incomparably more scarce. The hæmosporidia of the tertian is distinguished in the body of the *Anopheles* from those of the summer-autumn fever at least in the stages that we have observed up to now. The body of the hæmosporidium is paler, less refractive, and a little bigger at equal stages of development; the pigment is much more scarce and finer.

Naturally in the *Anopheles* which have stung several times the different stages of development are found one beside the other. This applies as much to the spring tertian as to the summer-autumn fevers.

In rare cases (mosquitos taken in malarial dwellings and stables), we have met with special bodies which merit all our attention.

These bodies are of various forms and lengths: some in the form of a sausage longer than a sporozoid and with constrictions, others about half the length of a sporozoid, oval, straight or curved. They have a thick membrane of yellow-brown colour and contain a body which can be compared to a sporozoid, especially visible in short forms. We can follow the various stages of the development of the membrane. The bodies under discussion are found in the middle of granular masses with or without capsules.

Evidently it is a question of spores as are found in other sporozooids. As to how they develop, we have not up till now been able to define exactly.

At times one is immensely struck by their irregularity which is such as to make one think of processes of degeneration.

Let us turn our attention to the salivary glands of many *Anopheles* who have stung malarial persons some time ago. In the salivary glands we see with great frequency that the cells

instead of presenting a hyaline appearance, shew contents which we shall describe with some detail.

Sometimes the whole cell is filled with masses of little bodies apparently round, rounded or slightly elongated; in other cells they occupy only the middle part. Sometimes in a tube one find a few cells containing these little bodies, but oftener one or more tubes are full of them. If the gland be pressed, there issue from the above-mentioned cells little fusiform bodies, much shorter than sporozoids, thicker and furnished with a nucleus. In some cases we have seen filaments in the same cell in the midst of these short little bodies, which filaments are easy to be recognised as the ordinary sporozoid proceeding from the capsule open in the coeloma. In one case these sporozoids were seen under the microscope to become shortened and take the form of the shorter little bodies just described.

Alongside the cells containing these bodies are found others containing a large mass generally round, sometimes curved, so as almost to appear a crescent, or else various similar masses smaller and of hyaline appearance.

This find has been observed: (1) in the *Anopheles* brought from dwellings and dissected at periods more or less distant from the sting; (2) in the *Anopheles* which had produced the spring tertian about a month before.

In total as far as up to now we have seen, it results that, whilst the find of sporozoites corresponding with those of the intestinal capsules goes on diminishing in proportion as they get further away from the period, in which the mosquito presented the matured parasite in the intestinal walls, so contrariwise, the find of the hyaline bodies described above goes on augmenting.

All these facts may be explained if we remember that the sporozoids which are not expelled from the salivary glands undergo a retrograde process, becoming modified in form and aspect and ending by being digested.

The observations reported up till now permit us to reconstruct the life cycle of the human hæmosporidia in the body of the *Anopheles claviger*: it finds for the most part confirmation in that observed by Ross regarding the proteosoma of birds in the *grey mosquito*. Amongst the fibres of the muscular tunic of the middle intestine especially in the three posterior quarters of this, the malarial parasites develop themselves later.

Such a development has been verified, up till now, for the parasites of the summer-autumn fevers and for those of common tertian. But not all the forms of these two parasites are capable of developing in a new host. For summer-autumn fevers, the development is verified when there are in the blood of the patient adult crescents capable of changing into flagellated bodies: for the tertian when there are large pigmented

sterile bodies already described by various authors, which can flagellate: that is, the development is verified when there are in the blood those forms which Grassi and Dionisi call Gamete. As has been seen, the first phases of life in the intestine of the mosquito present a somewhat different aspect according as they proceed from the crescents or from the pigmented bodies of the tertian, so much so, that a differential diagnosis between the two forms is possible if not easy.

The hæmosporidium grows rather slowly and soon surrounds itself with a capsule. On the rapidity of development the surrounding temperature appears to be of importance, and perhaps also the possibility in which the mosquito finds itself of procuring food or not. In proportion as the development precedes the parasite grows in the cavity of the coelum. It attains the diameter of about 70ft.

Whilst this progressive augmentation of volume is taking place, in the interior of the parasite those inward changes of the structure are produced which lead to sporulation (nude sporoblasts which transform themselves directly into sporozoites). At a certain point the capsule ruptures and the sporozoids disperse themselves in the coelum.

In a more advanced stage the sporozoites are found collected in the cells of the salivary glands, some of which may contain a large number of them. From the cells they are eliminated into the lumina of the glandular tubes, where sometimes they may be seen in such abundance that they fill them in great part. Thus one understands how, when the *Anopheles* again stings the man, it can infect him.

This passing from man into *Anopheles* and from it again into man, is distinctly demonstrated from observations and experiments, and constitutes the most certain outcome of our researches.

The hæmosporidium represents another cycle of life in the body of the mosquito the destination of which has not yet been cleared up. While the greater majority of parasites form sporozoids some end with the formation of the yellow-brown spores mentioned above.

These last have only been met with by us in rare instances. The thick membrane with which they are provided makes one think with reason that they are endowed with great resisting powers against external agents. Certainly on the death of the mosquito they are able to remain in the water.

Two hypotheses can be made as to their ulterior evolution. They are destined either to infect the young (only?) or directly man who swallows them with the water.

Against this last hypothesis are all the epidemiological facts that have been invoked against the so-called water-theory: Bignami and Bas-

tianelli hold as more than unlikely the idea that man can infect himself by drinking the water of marshy places. But we do not wish here to enter into this discussion which has been dealt with at length in various recent writings.

In spite of all, however, fresh experiments have been initiated in order to see if the ingestion of these spores can produce malarial fever in man and we await the results.

The first hypothesis includes the idea of the hereditary infection of the mosquito; that is, it includes the conception that the sporozoic infection can pass from the mosquito to a new generation. In favour of this hypothesis, there is above all, the analogy of the Texas fever, in which the passing of the infection from the mother tick to the young ones is demonstrated: there are besides, according to two of us, Bignami and Bastianelli, some epidemiological facts which it would be difficult to explain otherwise. For example, how could one explain the breaking out in the Roman Campagna of the first cases of summer-autumn fevers towards the end of June, or in the beginning of July, whilst in the spring patients with crescents are not at all to be met with? It might perhaps be observed that these are found in exceptional cases but, admitted the exceptional fact, how explain with this the unvarying fact, which has been accentuated above? All this would cause the necessity of admitting the hereditary infection of the mosquito.¹

If the difficulty of explaining one fact be considered a sufficient argument towards admitting another.

But wishing to remain within the limit of facts which have been observed, we must for the time being leave the question unsolved. We only add, that all the researches made upon the egg of infected mosquitos have not permitted us up till now to discover there any parasitic body: which circumstance takes us further away from the hypothesis, that the hereditary infection of the mosquito, if it occur at all, is propagated directly in the egg.

And yet we are inclined to the idea that the infection of the young comes by the ingestion of the spores on the part of the larvæ.

In conclusion, we may affirm: (1) The hæmosporidia of malaria (the facts above exposed and those already known from the zoological point of view allow the upholding of a family of the hæmosporidia or hæmancœbina which we wish to call them), pursue in man the well-noted cycle of life characterized by the long duration of the amœboid phase and by the want of incapsulated stages: in this cycle they reproduce themselves an undetermined number of times,

but also give place to forms which remain sterile in man (Gamete of Grassi and Dionisi).¹

These last attaining in the intestine of the *Anopheles Claviger* Fabr.² to the state of the perfect insect develop themselves as typical sporozoa till they form an enormous number of sporozoids which accumulating in the salivary glands return into man through the act of stinging. They may instead pass through another cycle of life, which gives place to the formation of spores.

(ii) The development of the malarial hæmosporidia in the body of the mosquito has been demonstrated in the parasite of the summer-autumn fevers and in that of the ordinary tertian.³

(iii) Whilst the passing direct of the hæmosporidia from man into the mosquito and from it anew into man is proved. The passing from the mosquito to the young is probable, but in point of fact includes a question which remains yet to be studied.

Further additions.—In the larvæ of certain culicidæ the walls of the middle intestine shew sporozoids: we shall presently have occasion to determine whether they have relations with the hæmosporidia.

The mosquitos in certain localities often show spores, of which we have spoken in the note.

In the much developed eggs of some mosquitos we have found very numerous bodies, which might be interpreted as spores of the human hæmosporidium.

ROME, 22nd December, 1898.

Current Literature.

MEDICINE.

Treatment of Epidemic Cerebro-Spinal Fever.—As this disease has been prevalent in more than one central jail in Bengal in 1898, it is worth quoting the following extract from *Pediatrics*, 15th June 1898 (*Glasgow Medical Journal*, November 1898). Treatment must be symptomatic, chiefly leeches, venesection in acute cases, and in first stage of disease in robust cases only (Bela Angyan); in coma cold douches for a few minutes every few hours; ice-bag to head and nape, as long as it makes patient feel comfortable. Calomel and mercurial inunctions are used by French writers. Opiates are indicated for excitement, vomiting and insomnia; contra-indicated in somnolence, or collapse. Quinke's theory seems justified that the accumulation of fluid produces pressure symptoms [but most authorities have found *lumbar puncture* more useful in diagnosis than in treatment, vide *Indian Medical Gazette*, October 1898, p. 391.] Aufrecht recently recommended warm baths.

¹ The seat of formation of the crescent is the medulla of the bones (Marchiafava and his pupils): one may think that the same occurs in the analogous forms of spring fevers.

² Synonyms: *Anopheles Maculipennis* Meig. and *Zanzarone*.

³ This naturally does not exclude the fact that it may also be verified in other species of diptera.

¹ L. Pleiffer has found in a larva of *Culex agluga*, which might belong to the evolutionary cycle of the hæmosporidia.

Bela Angyan recommends subcutaneous injections of corrosive sublimate along with ice-bags.

In this manner he treated twenty-seven cases, of which 70 per cent. recovered. The number of injections varied from 4 to 24. As a rule, the injections are well borne. One patient salivated slightly after the 14th injection. The following are said to be the results of corrosive sublimate injections:—(1) Mind of patient cleared up after second or third injection, headache improved, patient could sleep; (2) after five or six injections consciousness usually returned, and sleep became quieter and longer; (3) after from seven to nine injections the stiffness of neck improved or even disappeared; fever became less or ceased; (4) but corrosive sublimate did not seem to prolong or to shorten the course of the disease; (5) it seemed to check the formation of inflammatory products, as was shown *post-mortem* in some cases.

In the *Journal of American Medical Association* (September 24th, 1898) H. A. Moody recommends iodide of potassium (gr. 6 to 10 every two hours). He contrasts the good results obtained by use of K. I. in a series of cases with the poor results of morphine, ergot and blistering and quotes Tanner who wrote "with regard to medicines directly modifying the morbid action. I know only one in which the least reliance can be placed—the iodide of potassium." Out of ten severe cases Moody reports only one death under use of the iodide.

In Alipur Central Jail (which has had cases ten years out of the last twelve) there have been three fatal typical cases in November 1893, they died in 10, 48 and 66 hours respectively. Symptoms were acute and *post-mortem* appearances characteristic. In the *Lancet* (December 24th, 1898, p. 1719), we find a note on a report by Dr. W. J. Class on thirty-three cases of cerebro-spinal fever met with in Chicago in 1893. One symptom is specially noted, *viz.*, difficulty in swallowing met with in six fatal cases. It is attributed to fluid in fourth ventricle exercising pressure on nerve centres for deglutition. Dr. Class arrives at the following conclusions:—(1) that epidemic cerebro-spinal fever is a contagious disease of the same class as phthisis pulmonalis; (2) that insanitary conditions exercise great influence in affording a nidus for the growth of the germs of this disease; (3) that this disease should be notified to the public health authorities; (4) that all cases should be isolated, and all evacuations rendered innocuous by use of antiseptics.

Kerruga Peruviana.—This disease (also described by Manson, *Tropical Diseases*, p. 435) which in some respects resembles Yaws has been recently described by Odriozola of Lima in Peru. It has been known to the Spaniards since the days of Pizarro. It is called also *Carrion's disease* from a student of that name who inoculated himself with blood from a kerruga case, and died from the specific fever in thirty-nine days. The disease is said to be a variety of the deadly *Las Quebradas* fever which prevailed so frightfully during the making of the Oroya Railway. It is endemic in Peru, especially in the valleys (*quebradas*). Natives easily become immune, but strangers are rapidly attacked; also mules, horses, swine, cattle, fowls, &c. The acute variety is like a specific fever. Incubation—fifteen to forty days. Pyrexia intermittent or remitting, anemia is severe, the liver, spleen and lymphatic glands become enlarged. Hemorrhages and purpura are frequent, the patient may die from lung or bowel symptoms, or the chronic stage supervene. The eruption consists of large soft granulomata, often hæmorrhagic on face, limbs and mucous membranes. These granulomata may be absorbed or ulcerate and leave scars. Microscopically the warts consist of oedematous granulation tissue. They contain many pus-producing organisms, and often suppurate. Other bacilli are also found and have been cultivated from the blood.

Odriozola concludes that the disease is infectious malady capable of being inoculated, with no tendency to recur, but not contagious. Peruvian wort seems to resemble yaws, and ulcerating granuloma of the pudenda unless the latter is merely as Maitland claims a chronic venereal sore. (*Practitioner*, November 1898, p. 527.)

Malarial Peripheral Neuritis.—Dr. Campbell Hightett of Siam gives an interesting account (*Journal of Tropical Medicine*, November 1898) of some cases of peripheral neuritis which he attributes to malaria. In the course of intermittent or remittent fever pains in the legs and knees are complained of, worse at night, pass off towards morning. Cramps, pain is boring, burning or stabbing in spasms. The paresis may be markedly remittent also, *i.e.*, get better and get worse. Hemeralopia sometimes varies in severity from slight neuralgia to tenderness of nerves and paralysis of muscles. Patches of anæsthesia alternate with areas of hyperæsthesia. Reflexus exaggerated at first, but knee-jerk may be absent. Paralytic symptoms sometimes severe, usually only a heaviness in limbs and weakness in knees, cramps and later atrophy of muscles. In one case quoted effusion into knee-joint. Heart not much affected, may be arrhythmic or slow heart. Slight oedema of shins if accompanied with anemia which is common. Spleen always and liver sometimes enlarged. Diarrhœa is said to be "remittent" and to be cured by quinine. Fever purely malarial. Prognosis hopeful if patient is removed from the malarious locality.

The disease must be diagnosed from beri-beri, chiefly by the heart symptoms in latter disease, and more distinct ankle-drop in beri-beri. In a patient suffering from beri-beri, malaria and anchylostomiasis, it would be a nice question to disentangle the symptoms. A similar peripheral neuritis ascribed to malaria was described by Dr. H. Strachan of Jamaica in *Practitioner*, Nov. '97, vide *Indian Medical Gazette*, Jan. 1898, p. 32.

I have at present a case of peripheral neuritis (possibly malarial) which I hope to publish later on.

Infection by the air.—Though so many diseases are supposed to be conveyed by the air as a medium, it is curious how little attention has been paid to this medium compared with the work done as regards water, milk, &c. Flügge (*Practitioner*, December, 1898), has re-studied the question. As regards carriage of germs by clothes, he finds that even a gale of wind will not remove germs from the surface of wet clothes but a very moderate wind will remove them partly from dry clothes specially if they have been brushed or shaken, but from rough surfaces scarcely at all. Flügge found that dust remained floating in an undisturbed room for more than four hours, while water containing organisms cast into the air in fine drops from a spray remained floating for even six hours. He thinks that organisms from respiratory diseases are diffused in a fine spray in drops of water by coughing, sneezing, &c., and thinks that in the way they are more dangerous than as dried sputum. Ventilation will never remove all organisms, some are merely redistributed by the currents of air. J. J. CURRY (*Boston Medical and Surgical Journal*, October 13, 1898) gives fuller detail of Flügge's experiments, and some of his own. He found tubercular bacilli in the mouth fluid, and in the fine spray coughed out in nine cases out of twelve. In some cases the negative result was due to fact that all such had a low cough, and kept the lips closed during coughing. In any case the particles of sputum minute and large must ultimately fall on the ground, and become dried sputum which Cornet's experiments under Koch's direction show to contain the tubercular bacilli. Out of 118 samples of dust from hospital wards 40 produced tuberculosis in the animal inoculated.

[I am convinced that bronchitis and influenza can be thus spread; in two jails recently I had to deal with a

large number of bronchitis cases (which might even be called influenza). The number of new cases coming in became markedly reduced after isolating all for fourteen days after fever, and acute symptoms had gone though cough remained. They were kept in an empty ward at work and quite segregated. In Bhagalpur recently I attempted the same as far as available space allowed, also made a sweeper go round to disinfect with lime any sputum on wood-floors and verandah of hospital, especially where flies had settled in great numbers. It is quite conceivable also that this plague of flies should carry infective sputum, and afterwards settle on rice and other food at the feeding platforms. At any rate, the sputum in respiratory disease cases should be treated as infective like the stools of bowel-complaint cases.]

Incubation period of Enteric Fever.—An interesting observation amounting to an unintentional experiment is reported (*Wiener Klin Wochenschrift*, No. 27, 1898, *apud Practitioner*, December 1898) as to the incubation period of enteric. Several detachments of troops had to march through a village in which typhoid prevailed. One party thirsty and fatigued drank freely of the water of the place, the next detachments did not. Thirty-six of the first party were attacked, while the latter (the control animals so to speak) entirely escaped. The symptoms set in suddenly, in three after two days, in seven after three days, and in seven between ninth and fourteenth days. The disease ran a mild course in all, so the early invasion in ten cases is attributed rather to exhaustion and to the large quantity of water imbibed. [One would like before deciding to know more of the initial symptoms of those attacked in two or three days. Diarrhœa could be thus early produced.]

W. J. BUCHANAN, B.A., M.B.

SPECIAL SENSES.

The Development of the Operative Treatment of Squint.—Professor Snellen read a paper on this subject at the Edinburgh meeting of the B. M. A. (*Ophthalmic Review*, Vol. XVII, No. 202, 1898), and shortly reviewed the development of the contradictory views that still prevail. He said he had repeatedly convinced himself of the value of Priestly Smith's tenectomy of the antagonistic muscle. This may be described shortly as follows. An incision is made in the conjunctiva parallel to the margin of the tendon, and thereupon also in Tenon's capsule, in the same way as is done for the first stage of the English subconjunctival method of tenotomy. Through this opening he passes one blade of a flat forceps, sliding it underneath the tendon, whilst the other blade is closing on the outside of the conjunctiva. Thus tendon and conjunctiva are secured between the two blades of the forceps. Sutures are introduced on each side of the forceps, and knotted together after the tendon and conjunctiva, as far as they have been clasped between the two blades of the forceps, have been excised. This method limits the operative wounding to the tissue that must be excised, and avoids any further cicatricial process, such as would necessarily lead to an impediment of the free movement of the eye. Snellen believes that in the majority of cases simple tenotomy alone will suffice: certainly in all cases of spasmodic strabismus as is found with hypermetropia, or with paresis of accommodation. He has modified Von Graefe's method, and now performs the operation as follows: the description is given in his own words:—"I make the incision of the conjunctiva in a meridional direction, conformably to the longitudinal axis of the muscle. The tendon is then taken hold of with forceps and incised, so that a button-hole is made in the middle of its extension, and with the application of Von Graefe's hook, this incision is enlarged upwards and downwards. In order more easily to direct the scissors vertically to it, it is advisable to use a pair bent on the

flat. Finally a suture is placed to unite the edges of the wound. The operation is done under cocaine without chloroform, so that the effect may be observed and modified, if necessary. Any pain felt is due to the speculum, and to avoid this, an assistant should use sterilised netted gloves and keep the eye open without a speculum.

Dr. Henry L. Swain, of New Haven, read a paper before the American Laryngological Association (*Boston Med. and Surg. Journal*, Sept. 1898) entitled

Some Observations on the use of Aqueous Extract of Suprarenal Glands locally in the upper air Passages.—His conclusions were as follows:—

(1) We have in the aqueous extract of suprarenal glands, a powerful, local, naso-constrictor agent, and a contractor of erectile tissue, which it is safe to use in very considerable amounts without any dangerous or deleterious effects, locally, or to the general constitution of the individual.

(2) These local effects can be reproduced in the same individual apparently any number of times without entailing any vicious habits to either the tissue or the individual.

(3) The use of the extract seems rather to heighten the effects which may be expected from any given drug which may be used locally after it.

(4) In acute congestions, it has its widest application and greatest opportunity for good, but in certain chronic conditions of the hay-fever type, where redundant tissue seems prone to develop, it can be relied upon as one of the most helpful adjuvants which we have at command.

(5) The only difficulty seems to be the producing it in quantities and preventing its decomposition on standing.

At the same meeting, Dr. Henry L. Wagner, of San Francisco, reported a case of

Leptous Ulcer of the Lip.—This condition is extremely rare, only one case having been reported. At the International Congress it was stated that the primary seat of this contagious disease was in the mucous membrane of the upper air passages. The case that came to me was that of a middle-aged white man who had lived in China. He had a broken-down ulcer with nodules on the lower lip that had existed for some months with but little pain. It appeared to be syphilitic, but the nose and throat showed nothing abnormal. A portion of the ulcer submitted to examination showed the presence of lepra bacilli and innumerable suppurative bacilli. The lepra bacilli were lying about among the staphylococcus and streptococcus of suppuration. These bacilli were found partly within and partly without the cells. The patient did not return for further treatment. This case showed the lepra tuberosa form of the disease, and also demonstrated a channel by which it could be communicated.

The Absorption of Aqueous Tumour through the anterior surface of the Iris.—Professor Nuel at the same meeting (*O. R. loc. cit.*) described his experiments with Indian ink on the eyes of dogs and cats. The reason other experimenters have failed in filling the lymph apparatus of the iris is that they used rabbits in whom the system is entirely rudimentary. In cats, and in dogs to a lesser degree, the stomata on the anterior surface of the iris are well developed. They grow larger and denser towards the periphery of the iris where the intervening tissue is prolonged into the superficial strands of the ligamentum pectinatum. Indian ink injected into the vitreous rapidly makes its way through the stomata and fills the lymph sinuses. The trails of ink are always found in intimate connection with the blood-vessels. The practical bearing of these observations is interesting. The rudimentary state of

the lymph system in some persons may be the predisposing cause of glaucoma. Nuel found it apparently almost absent in a case of ectopia pupillæ on the side of the ectopia, and suggests its absence as the cause thereof. He also supposes that it may be the reason of the bad results of iridectomy in cases of chronic glaucoma, inasmuch as the excision of the iris really diminishes the excretion of the aqueous. Gummata and tubercles of the iris nearly always appear in the pupillary yaw of iris and (or) at the extreme periphery, i.e., where the lymph channels are found best developed. If Nuel's view be adopted, we understand the antiphlogistic effect of mydriasis in iritis owing to the closing up of the lymph orifices thereby. Myotics open these orifices, mydriatics close them; hence partly the usefulness of myotics and the dangers of mydriatics in glaucoma.

The use of Aluminium for Artificial Vitreous.—Bryant (*Journal of American Medical Association*, September 1898) uses a hollow frame made of aluminium. This becomes filled with granulation tissue as he found on excising the frames some weeks after insertion in dogs. Bryant prefers the frames to the hollow balls as extrusion is less frequent, and they are lighter.

The Theory of Accommodation.—The discussion provoked by Ischering's work during the last four or five years upon the mechanism of the accommodation continues. It will be remembered that Ischering founded his work upon that of Thomas Young, repeating his experiments so long forgotten, and confirming his conclusions, that accommodation for a near point is produced, not by relaxation, but by *increased tension* of the Yonula due to contraction of the ciliary muscle. This is of course quite opposed to the teaching of Helmholtz and the modern school who attribute the undoubted change in the convexity of the lens during accommodation for near objects to the contraction of the ciliary muscle *slackening* the Yonulas and so allowing the lens to change its shape by its own elasticity. The question has been ably argued out and experiments made by various observers since Ischering published his results, Cryellityer and Stadbeltd supporting him and Hess and others opposing him. The last addition to the subject is a paper read before the Ophthalmological Society (*Ophthalmic Review*, November 1898) by Mr. Priestley Smith.

The question simply put is, does the accommodative change in the lens depend on slackening of the Yonula (Helmholtz) or on tightening (Ischering). The anatomical arrangement of the parts concerned and nearly all the clinical and experimental facts, especially the observations of Hess, which show that during strong accommodation the lens is often tremulous and displaced downwards by gravity, strongly favour the former view. Ischering has proved, however, that during accommodation the anterior lens surface changes from a globular to a hyperboloid curve—that is, tends to become conical sharper at the centre of the pupil, flatter towards the margin; and this he contends can only be caused by tightening of the Yonula, supplemented by internal resistance at the pole of the lens. Priestley Smith experimented with an elastic circular hoop of steel and showed how by modifying the resistance at different points, the curve taken by the hoop on traction being made could be varied at will. From his experiments he concludes that the changes which Ischering has demonstrated with such admirable skill and ingenuity are not incompatible with the theory of Helmholtz, which to his mind explains them more satisfactorily than any other.

Randolph (*Journal of the American Medical Association*, September 1898) draws **conclusions from clinical and bacteriologic experiments with Holocain** in 50 cases in the Johns Hopkins Hospital,

Baltimore. He conducted a series of experiments to test the assorted germicidal action of holocain solutions. A one per cent. solution was found to have an inhibitory effect upon pus organisms and to kill them after a time. A solution of the strength used in ophthalmic practice possesses therefore distinct germicidal properties. Its anæsthetic effect was found to be rapid and effective, while like other observers, Randolph found no drying of the cornea or dessiccation of its epithelium and no dilatation of the pupil.

In the discussion that followed, Wardemann stated that holocain anæsthetises the deeper structures more thoroughly and has a more lasting effect than cocain. One disadvantage to those who boil their instruments in soda solution is that it is necessary to wash the instruments in sterilised water, because the soda is precipitated and the solution becomes turbid. A solution of holocain can be boiled without any ill-effect.

Galvanic Current in the Treatment of Pterygium.—Starkey (*Journal of the American Medical Association*, September 17, 1898) has treated a number of cases with a galvanic current. The method of employing the current is as follows:—

A fine platinum needle connected with the positive pole of the battery is introduced through the conjunctiva, near the apex of the growth and passed close to the sclera at a right angle to the direction of the growth. A current of from one to three milliamperes is used and is maintained for one to two minutes. Then a second puncture is made parallel with the first and two millimeters distant, and if desirable a third puncture. The immediate effect is the formation of gas, which appears in bubbles under the surface. Considerable congestion is occasioned, but large vessels are more or less collapsed. The pain is insignificant, and the treatment may be repeated in four or five days, if necessary.

Cases which seem to be suitable for this treatment are those with small growths not encroaching much upon the cornea, and especially where there is considerable enlargement of the blood-vessels. In such cases the treatment has been very satisfactory, and its advantages are: First, it avoids loss of tissue; second, it is painless; third, it does not incapacitate the patient; fourth, it stops the pterygium; fifth, it is quite as free from recurrences as any other method. In broad fleshy growths it is not advised except as a palliative.—(*Medicine*, December, 1898).

F. P. MAYNARD, M.B., D.P.H.

Public Health and Sanitation.

PLAGUE DECLARATION.

Plague in Calcutta.—A *Calcutta Gazette* Extraordinary, issued on the 26th ultimo, contains the following Resolution:—

By a Notification No. 6026 issued by the Municipal (Medical) Department of this Government on the 10th October 1898, it was announced that Calcutta was free from plague, no fresh case of, or death from, the disease having occurred since the 28th September. In a Resolution published on the same date, the Lieutenant-Governor drew attention to the danger of a possible reappearance of plague, and expressed his desire that the ward family and caste hospitals which had been opened under private management should be maintained in working order, and that the precautions which had been taken to stave off an outbreak, and to deal with it if it should arise, should not be relaxed.

2. Since these announcements were made, dropping cases of a suspicious character have been reported from time to time, some of which were of such a character as to leave little room for doubt as to their having been genuine plague. Until recently, these have been so few in number, so isolated, and for the most part so far open to doubt that it has not been found necessary to re-impose the restrictions which were withdrawn in October; and the Lieutenant-Governor, while fully cognisant of their significance, has thought it sufficient to report their occurrence from time to time to the Government of India, and to the various Foreign Governments, as required by the terms of the Venice Convention, still entertaining the hope that with the passing of the cold season they would disappear.

3. This hope has unhappily not been realised. During January 15 cases with 13 deaths were reported. During the present month, up to the 23rd instant, there have been 27 cases with 24 deaths, and the numbers reported during the latter part of the month are greater than in the beginning. In some wards of the town also, and notably in Ward No. V, the total registered mortality from all causes has lately risen in a marked manner above the normal rate, and though there is no direct evidence that this is due to plague, the absence of any other known cause is at least a ground for suspicion. Reports have also reached Government which point to the possibility that attempts may be made to conceal the occurrence of cases, the sufferers being turned out of their houses by the landlords or the other inmates, through fear of infection or for other reasons, and forced to seek shelter elsewhere. Intimation has been received that the authorities in Egypt have decided to apply the plague rules against arrivals from Calcutta: and orders have been issued by the Government of India that the regulations of the Venice Convention shall be enforced against Calcutta at the ports of Aden, Madras and Rangoon.

4. In these circumstances the Lieutenant-Governor is compelled, with much regret, to re-impose the restrictions which were withdrawn in October 1898. A Resolution is under issue prescribing that the inspection of the passengers and crews of vessels leaving Calcutta for ports out of India shall again be conducted by day on shore at the time of embarkation, and the fact that this has been done will be endorsed on the bill of health to be granted before any such vessel leaves the port. Correspondence has recently passed regarding a proposal that the clothing of the crews and deck passengers of vessels proceeding on long voyages shall be disinfected before departure. The Lieutenant-Governor was at first in hopes that this measure might not be necessary, but in view of the altered condition of things this is no longer possible. In communication with the *Liners' Conference* and the *President of the Chamber of Commerce*, he has drawn up a scheme to give effect to the proposal, and arrangements will be made to bring it into force as soon as the apparatus can be procured. Orders are also under issue to provide for the inspection of passengers by train in the same manner as was done prior to October 1898.

5. The Lieutenant-Governor has also had under consideration the question of revising the regulations for dealing with plague in Calcutta itself. Those now in force are contained in plague Regulation No. 9, dated 10th November, 1897, and were drawn up with reference to the experience which had been gained in Bombay and elsewhere, before any case of plague had occurred in Calcutta. In substance, the Lieutenant-Governor sees no reason to doubt their propriety and efficacy. In some points of detail, however, later experience has suggested improvements. In order that effective measures may be taken to prevent the spread of infection, it is of the first importance that every case which occurs shall be promptly brought to the notice of the authorities.

Foreign Governments would have just cause for complaint if the measures adopted locally were such as to lead to the concealment of cases; nor can the Local Government hope to cope successfully with an outbreak if the regulations in force are so repugnant to the sense of the people affected as to drive them to withhold information and hide away their sick instead of bringing them forward for treatment. Experience has shown that success has attended the system prescribed in Rule 46 of Plague Regulation No. 9, by which persons found to be suffering from plague are, at their discretion, permitted to resort to ward, caste, or family hospitals, maintained by private contributions, instead of being removed for segregation to the special plague hospitals at Maniktala, Marcus Square, and the Budge-Budge Road. Still more satisfactory has been the arrangement frequently resorted to by which persons are permitted to set apart portions of their dwelling or garden houses, under due restrictions for use as private hospitals for themselves and their families. In the case of the poorer classes, however, the arrangements have not worked so well. It is among the poor that the majority of the patients has usually been found; and any system is defective which leads these ignorant and superstitious people to resort to any shift rather than expose themselves to the chances of compulsory removal to a plague hospital or segregation camp.

6. The Lieutenant-Governor is, therefore, of opinion that measures must be taken to apply in the case of the poorer classes also the system which has so far worked well in respect of classes higher in the social scale. In future no person shall be removed to a public hospital under Rule 46 of Plague Regulation No. 9. without his consent, provided that suitable arrangements are made for the treatment of the case at home. If there is any ward, caste, or family hospital for admission to which he is eligible, and to which he is willing to go, he may be moved thither. If there is no such hospital available, an endeavour should be made to explain to the patient or his friends the advantages which he would obtain in a public hospital in respect of treatment, attendance, and surroundings. But if, notwithstanding this, he still prefers to be treated at his own home, arrangement shall be made to adapt the latter for the purposes of a private isolation hospital. The other inmates, except such as are in attendance on the patient, should be induced to remove elsewhere. Medicines and medical attendance should be provided free of cost, and on the recovery of the patient (or after his death, if the case should terminate fatally) the premises should be either thoroughly disinfected, or, if necessary, demolished, compensation being paid to the owner. All clothing or bedding which is likely to have become contaminated should also be at once disinfected in the *Equifex* disinfector or destroyed on payment of compensation. If any structural or internal alterations in the house or hut appear necessary in order to render it suitable for its purpose, these shall be carried out by the Chairman and the Health Officer at the public expense.

7. By these measures, the Lieutenant-Governor hopes to secure the active co-operation of the public in the reporting of cases promptly as they occur. There is at present no serious ground for alarm. Such cases as have occurred are undoubtedly sporadic. The season of greatest danger is nearly passed. Much has been done during the past two years to improve the conservancy of the town, and to introduce a higher standard of cleanliness. The municipal establishments have been strengthened, and a strong staff of competent medical and sanitary officers is at hand. The course which the disease has so far taken in Calcutta is such as to warrant the hope that the town may yet escape a serious outbreak. And the Lieutenant-Governor is confident that all classes of the community will unite with the authorities in their efforts to ward it off.

Correspondence.

SERUM-TREATMENT OF LEPROSY.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—The enclosed comment from a contemporary on Lieutenant-Colonel Duke's article on this subject, may be interesting:—"A recent article in the *Indian Medical Gazette* describes experiments made upon lepers by Colonel Duke, I.M.S., in Central India, which are of a very suggestive kind. They are based upon the knowledge, which is gradually extending its application to all manner of zymotic diseases, that at a certain stage of a malady, and especially in the convalescent period, the blood serum of the patient becomes possessed of qualities antagonistic to the germ which is responsible for the trouble. All other curative methods having failed in connection with leprosy, Colonel Duke determined to try the result of injecting blood serum of one leper patient into the veins of another. He did this to some extent at haphazard at first, though as he went on he gradually systematised his experiments, with the result that he obtained effects that are sufficiently striking. It is true that no cures were produced, but in more than one case very remarkable improvement took place, the patients declaring themselves twelve annas—i.e., seventy-five per cent.—better. They were so convinced of the fact that the fame of this partial success went out into the neighbouring villages and brought in others, who had previously thought their cases hopeless, for treatment. The operation proved quite harmless, the patients for the most part supposing only that they were being bled—a form of doctoring with which they are well acquainted in the Central Indian States, and to which they seem rather partial. The failures do not appear as yet to have been completely analysed, though they open up a field of investigation almost as interesting as the successes. Curiously enough but few of the patients seemed to think they had failed to benefit, though some of them admitted they were only a little better. This may have been owing to the treatment they received in other ways, and the improved cleanliness of the dressings applied to their sores, for it would seem to follow, if the theory on which the treatment is based is correct, that if, for instance, A's blood serum is curative, when injected into B's veins, B's blood serum can be of no use to A, who must have presumably reached a stage of partial reaction already. The all-important question has still to be solved of the time when, and of the circumstances under which, the blood-serum of one leper patient becomes possessed of curative properties in regard to another leper. Dr. Duke's investigations only pointing to the possibility of the existence of some such antidotal interaction. The matter will no doubt be taken up by other inquirers, the bacteriological aspect of the question, with which Dr. Duke modestly declares himself incompetent to deal, being specially promising. Leprosy is not the only disease which seems to invite similar experiment, though, from the fact of its hopeless incurability, it was no doubt a safe one to commence upon, in that the risk of making matters worse to begin with was very small, and in the event proved non-existent. In all other respects leprosy is far less promising than such a malady as the plague, for the convalescent stage is the one in which the blood-serum of a patient is on *a priori* grounds most likely to possess curative properties; and in the case of leprosy convalescence can hardly be said to occur. In plague, on the other hand, where complete convalescence is only less frequent than a fatal termination, this difficulty does not occur, and considering the extraordinary ratio of mortality, rising in the case of the recent Bombay outbreak to more than seventy per cent. of the cases, there should be no difficulty in finding subjects for experiment. It is true that as day by day goes by, confidence in the efficacy of Dr. Haffkine's inoculation continues to grow. Even if this operation should come fully up to what has been claimed for it, it remains merely preventive in its action, and is useless once a patient is actually attacked, though this is the time when, in ninety-nine cases out of a hundred, he first makes up his mind to submit himself to treatment of any kind. It is here that the transfusion method comes in, it being clear that any utility it might possess would be not of a preventive but of a curative nature. Under these circumstances, whether or not it has already been tried, Dr. Duke's experiences with it in leprosy, and the encouraging results he has obtained, would seem sufficient reason for experimenting with it on the graver malady, under the improved conditions of observation which the aseptic method has rendered available."

I am, &c.,

A.

HÆMATURIA OR "BLACKWATER" FEVER IN INDIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—As I am anxious to obtain as much information as possible on the subject of Hæmaturia or "Blackwater" Fever, and am told that in some parts of India cases occur, I shall be much obliged if you will insert the following series of questions in an yearly issue:

1. Has it been noticed in your district for long and, if so, does it occur at any particular seasons?
 2. What relation does its incidence bear to the common malarial fevers? Do these present any unusual symptoms or exhibit any increase in virulence at the time or in the season when the hæmaturic cases occur?
 3. What virulent types have you met with in (a) children, (b) adults, in the district in which hæmaturic cases occur?
 4. Have you met with any other peculiar symptoms besides the hæmaturia in your cases or any sequelæ other than those common in malaria?
 5. If *anæmia* follows, is it quickly recovered from or not? Does the *anæmia* ever tend to increase after the acute symptoms have passed off? As full information as possible is desired on these points.
 6. Does the hæmaturia follow immediately after the onset of the fever. If not, and a period of some days fever occurs first, have you noticed any peculiarities in the fever which would lead you to consider that hæmaturia was likely to occur?
 7. Do rigors occur, and when? Are they repeated?
 8. Have you noted the presence of parasites in the blood and, if so, of what types?
 9. If your patients have taken quinine, did they do so regularly or occasionally, and in what doses? If possible give the period and amounts.
 10. Have you noticed any cases which seemed to be ordinary fever develop hæmaturia after exposure, chill or change of residence from plains to hills. If so, how long after these incidents did the hæmaturia occur?
 11. Any further particulars you think of importance.
- I shall be leaving for Blantyre, British Central Africa, shortly, and any answers addressed to me there will be much appreciated.
- The subject is of great importance as it is the cause of much of the European mortality in the British Tropical African Colonies, though in the West Indies it only occurs and that rarely in isolated parts of the Colony.
- The accounts given by observers vary greatly, and the etiology is most obscure, even its relation to malaria being denied by some.

CALCUTTA: }
The 23rd February 1899. }

I am, &c.,

C. W. DANIELS, M.B.

ABSENCE OF SYPHILIS IN FIJI.

To the Editor of the "INDIAN MEDICAL GAZETTE."

SIR,—My remarks on the above subject, to which Dr. Daniels takes exception in your November issue, did not refer to his own valuable papers, but to private conversations with Mr. Hutchinson and others. I had noted that Dr. Daniels' statements referred to the *aboriginal Fijians only*. My scepticism applied to the more sweeping statement that syphilis was absent in *Fiji*. On page 360, Vol. VII, Mr. Hutchinson heads an article with the title,—"*Reputed absence of Syphilis in the Fiji Islands and Prevalence of Yaws.*"

On another occasion, I very stupidly attributed a statement of Hirsch's to Dr. Daniels, for which I am extremely sorry.

I am, etc.,

CACHAR: }
9th January 1899. }

ARTHUR POWELL.

THE MADRAS PLAGUE CASE.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—As you did not publish the letter I wrote to you giving details about the case of plague which occurred at the General Hospital, Madras, I shall feel obliged by your inserting this brief note.

Lt.-Col. Maitland (in his second letter) lays great stress upon the fact that three medical men who saw the patient were of opinion that it was not a case of plague. It is necessary to state that *four medical men who saw the case were very decidedly of the reverse opinion*. Of these four, one was the Sanitary Commissioner, Lt.-Col. King, the other was the Health Officer of Madras, and a third was the medical attendant on the case and Professor of Hygiene, i.e., myself.

I regret very much that you did not publish my original letter since the latter, taken in conjunction with Dr. Cook's letter, would have carried conviction as to the true nature of the case, to the mind of every unbiassed reader.

In conclusion, I wish to emphasise the fact that the assertion that the patient had twice before suffered from *similar* attacks is demonstrably incorrect, a statement in which I am supported by the patient himself.

I am, &c.,

A. G. GRANT,

Capt., I. M.

ANKYLOSTOMA DUODENALE.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—On page 23 of the Gazette for January 1899 you publish two conclusions arrived at by Drs. Green and Jacoby, the second of which is "that a person may have the ankylostoma in his intestines without being the subject of ankylostomiasis," and you say "as supporting the second of their conclusions Dr. Green and Dr. Jacoby found that a large number of Asiatics and Africans in whose stools the ova of ankylostoma were found exhibited no signs of anemia."

This is quite true as far as it goes, but stated in this way it is likely to mislead. Drs. Green and Jacoby have not told us whether the worms were present in the intestines of these people in large or small numbers (they should have estimated the number of worms from the number of ova). As they say there was no anemia I say this proves that the worms were present only in small numbers, probably less than 100.

Drs. Green and Jacoby wish to contend that the worms can be present for any length of time in large numbers (say 500 or more for 6 months) without producing anemia and the signs and symptoms of ankylostomiasis? If they do, I am sure that no one with experience of the disease will agree with them.

Every one acquainted with the disease knows that in every ankylostoma-infected place there are numbers of natives with as yet only a comparatively few ankylostoma in their intestines, and that these small numbers are insufficient to produce anemia or marked effects; but if these persons continue to reside in this same place and if no special precautions are taken, it is obvious that these persons will slowly but surely continue to swallow ankylostoma larvæ till sooner or later large numbers of ankylostoma—say 500—exist in their intestines, and that then before long anemia and the characteristic symptoms of ankylostomiasis will surely occur.

In my paper on Ankylostomiasis published in the *Indian Medical Gazette* of November 1895 and January 1896, I dealt fully with this question, viz., the absence of anemia and of signs of ankylostomiasis when only small numbers of the worms were present and the danger of the erroneous conclusions as to the harmlessness of ankylostoma that were far too frequently based on the observation of cases in which only small numbers were present.

JAFFNA, CEYLON; }
The 22nd January 1899. }

HAYMAN THORNHILL,
Colonial Surgeon.

Service Notes

PAY OF R.A.M.C.

THE following rates of pay have now been fixed for the various ranks of the R.A.M.C.: Lieutenant on being commissioned after undergoing the course of instruction at Netley Hospital, £200 a year; Captain, after five years' service, £250, rising to £273; Major, after twelve years' service from date of first commission, £365 to £410; Lieutenant-Colonel, £456 to £601; Colonel, £730; Surgeon-General, £1,003; Servants' quarters and fuel are allowed in addition to pay of rank, and in case these are not supplied, allowances are granted instead. With regard to pensions, a Medical Officer can retire after twenty years' service on £365 per annum; after twenty-five years on £410, rising proportionately to £500. Colonels after three years' service are granted £640 per annum, and Surgeon-Generals £370. A scale of gratuities is also provided, and a Medical Officer, after ten years' service, may retire on a gratuity of £1,250; after fifteen years £1,800; and after eighteen years £2,500.

MEDICAL STAFF OF THE VICEROY.

THE following appointments have been made on the personal staff of the Governor-General of India from January 6th. To be Surgeon:—Lieutenant-Colonel E. H. Fenn, C.I.E., R.A.M.C. To be Honorary Surgeons:—Surgeon-General R. Harvey, M.D., C.B., D.S.O., I.M.S.; Colonel D. O'C. Raye, M.D., I.M.S.; Colonel D. Sinclair, M.B., C.S.I., I.M.S.; Lieutenant-Colonel A. J. Willcocks, M.D., I.M.S.; Lieutenant Colonel S. H. Brown, M.D., C.I.E., I.M.S.; Colonel W. P. Warburton, M.D., C.S.I., I.M.S.; Surgeon-General W. S. M. Price, A.M.S.; Lieutenant-Colonel G. D. Bourke, R.A.M.C. To be Honorary Assistant-Surgeons:—Assistant-Surgeon E. Mackenzie, Bombay; Assistant-Surgeon C. A. Lafrenais, Madras.

NETLEY RESULTS.

THE distribution of prizes to the surgeons on probation for the Royal Army Medical Corps and the Indian Medical Service, by Sir Ralph H. Knox, K.C.B., Permanent Under-Secretary of State for War, took place on January 31st before a large gathering of distinguished medical and other officers.

Colonel Notter read the following returns, showing that the whole of the surgeons on probation, who had been studying at Netley, had passed both the London and Netley examinations, and had been granted their commissions:—

ROYAL ARMY MEDICAL CORPS.

	Combined Marks.		Combined Marks.
H. P. W. Harrow	5,047	W. B. Winkfield	4,147
J. E. Hodgson	4,796	T. C. Lauder	4,044
A. L. Scott	4,673	J. W. Leake	3,925
L. E. L. Parker	4,607	J. W. H. Houghton	3,828
J. G. Gill	4,541	D. E. Crum	3,805
G. W. G. Jones	4,383	H. S. Taylor	3,803
M. H. G. Fell	4,321	G. M. Goldsmith	3,632
G. H. Goddard	4,280	R. H. Lloyd	3,534

NOMINATED SURGEONS ON PROBATION.

	Netley Marks.		Netley Marks.
D. S. Harvey	2,619	H. D. Packer	1,993
J. M. Sloan	2,545	L. Humphrey	1,946
H. E. Haynes	2,532	R. S. Rodger	1,912
F. J. Brakenridge	2,500	W. W. Scarlett	1,788
G. C. Phipps	2,271	H. K. Palmer	1,716
N. J. C. Rutherford	2,269	A. O. B. Wroughton	1,713
G. J. A. Ormsby	2,192	F. Ashe	1,635

INDIAN MEDICAL SERVICE.

	Combined Marks.		Combined Marks.
J. C. H. Leicester	6,337	J. N. Walker	4,222
H. Innes	5,964	V. H. Roberts	4,221
W. S. Willmore	5,559	J. E. Robinson	4,186
A. E. Walter	5,104	C. H. B. Adams	4,163
C. Hudson	5,029	G. King	4,082
L. T. R. Hutchinson	5,014	T. S. Ross	4,027
C. F. Weinman	4,833	G. P. T. Groube	3,872
H. M. Craddas	4,792	P. P. Atal	3,827
A. M. Fleming	4,368	W. McM. Pearson	3,779
E. L. Ward	4,341	D. C. Kemp	3,764

The prizes were awarded for marks gained in the special subjects taught at the Army Medical School, and the Herbert prize of £20, Martin Memorial medal, the de Chaumont prize in Hygiene, and the 2nd Montefiore prize were gained by J. C. H. Leicester; 1st Montefiore prize of 20 guineas and medal, by H. Innes; the Parkes Memorial medal by A. L. Scott; the Maclean prize for Clinical and ward work, by L. T. R. Hutchinson; the Pathology prize presented by Surgeon-General Hooper, C.S.I., by D. S. Harvey.

INDIAN MEDICAL SERVICE EXAMINATION.

THE following is a list of successful candidates for the Indian Medical Service at the recent examination:—Messrs. C. Dykes, W. E. McKechnie, E. D. Greig, D. McCay, J. Urwin, W. Harvey, H. Peile, W. Forster, D. Cowen, A. Fry, E. Maddock, A. Tucker, F. Lewis, M. Mannuk, W. Tucker, C. Lawson, J. Beaman, and W. Dickinson.

SURGEON-GENERAL W. TAYLOR, Principal Medical Officer of Her Majesty's Forces in India, will arrive in Bombay on 11th March. He will go on an inspection tour to Calcutta, Lucknow, Bareilly, Meerut, Umballa, Mian Mir, Rawalpindi and Peshawar before proceeding to Simla.

SURGEON-GENERAL HARVEY, Director-General of the Indian Medical Service, will make a tour next month to Nagpur and Bombay in connection with the operations for the suppression of the plague.

GOVERNMENT has sanctioned the grant of the North-West frontier gratuity to ten ladies of the Indian Army Nursing Service, who were employed in the field during the late campaign. The rate is fixed at 7½ shares, the amount laid down for Lieutenants.

LIEUT.-COLONEL THOMAS MAYNE, of the Indian Medical Service, has died at Melbourne, aged 49. Colonel Mayne, who joined the Service as assistant-surgeon in 1872, had been in India for 26 years. For the greater part of this time he was in charge of the medical department of the 24th Madras Infantry. An enquiry which he held into the diet of military prisons in the Presidency resulted in a saving of Rs. 20,000 by the Government, who recognised his services by presenting him with a testimonial. He recently assisted in the investigations as to plague bacteria. Colonel Mayne was on his way home for the benefit of his health when he was seized with dysentery, and was landed at Melbourne, where he died. He had intended to return to duty if his health improved.

Gazette Notifications.

GOVT. OF INDIA.

MILITARY.

Surgeon-General A. F. CHURCHILL, M.B., Army Medical Staff, is appointed to officiate as Principal Medical Officer, Her Majesty's Forces in India, dated 31st January 1899.

Surgeon-General L. D. SPENCER, M.D., C.B., Indian Medical Service, Bengal Establishment, who was appointed to officiate as Principal Medical Officer, Punjab Command, is confirmed in that appointment, with effect from 25th October 1898.

Captain T. A. O. LANGSTON, Indian Medical Service, to the medical charge of the 3rd Regiment of Bengal Infantry, *vice* Major S. HASSAN, Indian Medical Service, retired.

The following officers of the Royal Army Medical Corps shortly come out to India for a term of duty and are posted as follows:—To Bengal, Majors ADAMSON and MUMBY and Lieutenant THORP; to the Punjab, Major BUTT, Lieutenant POE, Lieutenant WATTS and Lieutenant BROWNE MASON; and to Bombay, Majors CORKERY and R. J. HALL, Captain MACCARTHY, Lieutenants DOBBIN, H. G. MARTIN and HERRICK; to Madras, Majors DAVIDSON and CROITS.

Captain MURISON, R.A.M.C., has resigned his commission.

Captain W. H. ORR, Indian Medical Service, to be Medical Officer, Lawrence Military Asylum, Sanawar, *vice* Major F. WYVILLE-THOMSON, who has vacated, dated 1st December 1898.

Lieutenant-Colonel E. PALMER, I.M.S., in medical charge of the 9th Bengal Lancers, on being relieved by Captain LUARD, I.M.S., 45th Sikhs, proceeds to Miran Shah to take up his appointment as Principal Medical Officer, Tachi Field Force, *vice* Lieutenant-Colonel BOOKEY, I.M.S., granted sick leave to England.

PROMOTION—INDIAN MEDICAL SERVICE.

The following promotions are made subject to Her Majesty's approval:—

Bengal Medical Establishment.

LIEUTENANTS TO BE CAPTAINS.

Archer William Ross Cochrane, M.B., F.R.C.S.; William Wesley Clemens, M.B., B.S.; James Alexander Black, M.B., C.M.; Roger Parker Wilson; Victor Edward Hugh Lindsay, M.B., B.C.H.; James Currie Robertson, M.B., C.M.; Norman Robinson Jones Rainier; Christopher Denning Dawes; Edmund Ludlow Perry.

Madras Medical Establishment.

LIEUTENANTS TO BE CAPTAINS.

Michael Biddulph Pinchard; William James Niblock, M.B., B.C.H.; Clarence Barrymore Harrison, M.B., C.M.; Nicholas Purcell O'Gorman Lalor, M.B., B.C.H.; Thomas Henry Symons; Ernest Reinhold Rost.

Bombay Medical Establishment.

LIEUTENANTS TO BE CAPTAINS.

CHINTAMAN RAMCHANDRA BAKHLE; KRISHNOJI VISHNOO KURDAY.

Honorary Captain JAMES McNAUGHT, Senior Assistant-Surgeon, Indian Subordinate Medical Department, Bengal, is permitted to retire from the service, with effect from the 17th October, 1898.

The undermentioned ladies are admitted into the Indian Army Nursing Service in the grade of Nursing Sister:—Miss J. E. B. HITCHMAN, Miss M. R. TRUMAN, Miss F. COLEMAN and Miss A. V. STEWART.

Colonel BURNETT, Principal Medical Officer, Mandalay District, proceeds home on eight months' leave.

Lieutenant-Colonel A. H. C. DANE, M.D., Indian Medical Service, Agency Surgeon in Bhopal and Civil Administrative Medical Officer in Central India for eight months.

CIVIL.

The services of Captain W. E. JENNINGS, M.B., C.M., I.M.S. (Bombay), are placed permanently at the disposal of the Government of Bombay.

The services of Captain A. Hooton, I.M.S. (Bombay), are placed temporarily at the disposal of the Government of Bombay, with effect from the date on which he assumed charge of his duties under that Government.

The undermentioned officers are placed permanently at the disposal of the Government of Bengal:—

Major Upendra Nath Mukerjee, I.M.S. (Bengal); Captain R. H. MADDOX, I.M.S. (Bengal); Captain H. M. EARLE, I.M.S. (Bengal); and Captain LEONARD ROGERS, I.M.S. (Bengal).

The services of Lieutenant M. H. Anderson are replaced at the disposal of the Military Department.

The services of the undermentioned officers are placed temporarily at the disposal of the Government of Madras for employment on plague duty:—Captain S. A. PEARCE and Captain A. H. ALLENBY.

The services of Major H. E. DEANE, R.A.M.C., are placed temporarily at the disposal of the Foreign Department for employment on plague duty in Mysore, with effect from the date on which he assumed charge of his duties.

The services of Captain C. K. MORGAN, M.B., R.A.M.C., are placed temporarily at the disposal of the Government of Bombay for employment on plague duty, with effect from the 17th October 1898.

The services of Captain J. ENTRICAN, M.D., I.M.S. (Madras), are placed temporarily at the disposal of the Chief Commissioner of the Central Provinces.

MADRAS.

Lieutenant-Colonel J. MAITLAND, M.D., I.M.S., Senior Surgeon, General Hospital, Madras, privilege leave for three months, from 4th April 1899.

Mr. WILLIAM RANNA, M.A., M.D., D.P.H., to be extra Additional Medical Officer, North Arcot District, for plague duty.

N.-W. PROVINCES.

Captain W. YOUNG, I.M.S., Officiating Civil Surgeon, from Muzaffarnagar to Plague duty at Hardwar in the Saharanpur District.

BENGAL.

Lieutenant-Colonel J. LEWTAS, I.M.S., Civil Surgeon of Darjeeling, is appointed, until further orders, to act as a Civil Surgeon of the first class.

Lieutenant-Colonel R. COBB, I.M.S., is appointed, until further orders, to act as a Civil Surgeon of the first class, during the absence, on leave, of Lieutenant-Colonel W. H. GREGG, I.M.S.

Mr. G. O. RANGER is appointed to act as Lecturer on Dentistry, Medical College, Calcutta, during the absence of Professor W. T. WOODS.

Captain J. T. CALVERT, I.M.S., Civil Surgeon of Bhagalpore, is allowed furlough for twelve months.

PUNJAB.

Major G. W. P. DENNYS, I.M.S., Civil Surgeon, Sialkot, has obtained furlough for twenty months, with effect from the 25th of February 1899.

Captain WOLFE, I.M.S., from Burma, to be special Health Officer in Simla.

Major H. M. MORRIS, I.M.S., Civil Surgeon, 2nd class, sub *pro tem*, is confirmed in his appointment.

Captain A. W. T. BUIST, M.B., C.M., I.M.S., Officiating Civil Surgeon, is confirmed as Civil Surgeon of the 2nd class, with effect from the 30th of November 1898, *vice* Major M. G. DWYER, M.B., I.M.S., retired from the service.

BOMBAY.

Lieutenant-Colonel K. R. KARTIKAR, I.M.S., and Mr. R. P. CLOOSTOWN, respectively delivered over and received charge of the office of the Police Officer in charge of His Highness the ex-King Thebaw on the 26th January 1899.

The services of Captain S. H. BURNETT, M.B., C.M., I.M.S. (Bombay), are placed permanently at the disposal of the Government of Bombay.

Military Assistant-Surgeons H. W. DEB. PRESCOTT, from medical charge, N.-W. Ry., Kotri, to Bai Motilal and Sir Dinshaw Maneckji Petit Hospitals, Bombay, 7th December 1898; A. V. M. KINO, from Bai Motilal and Sir Dinshaw Maneckji Petit Hospitals, Bombay, to House of Correction, Common Prison, Bombay, from 7th December 1898; A. E. ALMEIDA, from Military duty, Persian Gulf Telegraph Dispensary, Fao, from 10th January 1899.

CENTRAL PROVINCES.

The services of Captain J. ENTRICAN, M.D., I.M.S. (Madras), are placed temporarily at the disposal of the Chief Commissioner of Central Provinces.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the *Indian Medical Gazette* Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

Textbook of Gynecology. Edited by J. M. Baldy, M.D. 2nd Edn. Philadelphia: W. B. Saunders, 1898.

Textbook of the Diseases of Children. Edited by L. Starr, M.D. 2nd Edn. Philadelphia: W. B. Saunders, 1898.

Glaucoma: Its Symptoms, varieties, pathology and treatment. By A. Stirling. St. Louis, Parker, 1898.

Traitement des Dermatoses. L. Brocq, Paris, 1898.

Treatment of Diseases and Disorders of the Heart. By Sir R. D. Powell, M.D. London: H. K. Lewis, 1899.

Surgery for Nurses, 5th Edn. By J. Bell, M.D. Edinburgh: Oliver and Boyd, 1899.

Cresote: Mode d'action, par Dr. P. R. Simon, Paris, 1899.

Vaccination by S. Monckton Copeman, M.D. London: Macmillan & Co., 1899.

COMMUNICATIONS RECEIVED FROM:—

Dr. H. Thornhill, Ceylon—Lieut.-Colonel W. H. H. ...
 Captain W. J. Buchanan, Bhagalpur—Major F. P. ...
 —Major D. G. Crawford, Calcutta—Major J. J. ...
 Assistant-Surgeon Kalimohan Sen, Police Hospital, Calcutta—Asst. Surgeon M. C. Mukerjee, I.M.S., Nahan—Captain L. Rogers, Kumaon—Dr. A. Powell, Calcutta—Kathiawar Times—
 Nadirshaw " " Grant, I.M.S., Madras—Dr. C. W. Dani " " I.M.S., Plymouth—Colonel K. McLeod, London.

Original Articles.

A CASE OF PERIPHERAL NEURITIS PROBABLY MALARIAL.

By W. J. BUCHANAN, B.A., M.B., DIPL. STATE MED.,
CAPTAIN, I.M.S.,

Superintendent, Central Jail, Bhagalpur.

THE following case of peripheral neuritis has recently been in my charge in the hospital of the Central Jail, Bhagalpur.

Prisoner No. 759, Bonari Dosadh, aged 35, an inhabitant of Purnea District, came to hospital with fever on 1st November 1898. This fever persisted for five weeks. It was of a low type, never exceeding 100°F., and usually normal in the mornings. It was considered to be malarial as the patient was in a state of commencing malarial cachexia. He was anæmic, had enlargement of the spleen (down to edge of ribs) Hæmic murmurs in the vessels of the neck. Heart sounds normal. Pulse 82 to 90, small and compressible. The low fever as is common in chronic malarial cases did not respond to repeated doses of quinine.

Previous history.—Patient was a resident of North Purnea, and had suffered two years ago from that form of severe malarial cachexia known as *Kala dukh*, which has been recently described by Captain Harold Brown, Civil Surgeon of Purnea (*Indian Medical Gazette*, September 1898). Patient's face is certainly of a very dark complexion, partly from dirt and partly due to the colour of the skin. During the former attack he states that he had similar symptoms in both legs. He had two admissions to hospital in Purnea jail, once for dysentery and once for ague. In Bhagalpur he had two attacks of malarial fever during last autumn, once in July and again in September.

The present attack began 1st November 1898, the fever persisted for five weeks. About a week before the fever disappeared, he began to complain of severe pains in the legs which kept him awake at night. The pains were most severe at night, beginning at sunset and getting less by morning. The knee-jerks were lost or with difficulty excited, there was no ankle-clonus. Tremors were easily provoked, and there was a constant complaint of tingling and numbness. There was hyperæsthesia of the legs below the knee, and handling the limbs was evidently painful. This condition gave place to marked anæsthesia of both feet symmetrically. The line of commencing anæsthesia was at first distinctly marked by the line of flexure of the ankle-joint in front. Anæsthesia is always difficult to be sure about in a patient who has any interest in deceiving, but in this case frequent

and repeated examination obtained the same results which were probably correct. There was no wasting of the muscles, but the patient walked in a high stepping fashion which pointed to some paresis of the flexors of the ankle joint. He also asserted that he could scarcely feel the ground under his feet. This was a volunteered statement, not in reply to any direct question. This condition was treated by directing the patient to keep his feet for half an hour, twice daily, under a tap of cold water and afterwards to dry them well, and have them massaged and well rubbed with mustard oil. Sedatives were given at night, at first bromide of potash and afterwards opium (grs. 1½) at evening. Tonics and quinine were also given and bone-marrow tabloids. After the fever left him, under this treatment, his general health rapidly improved, and the area of anæsthesia gradually and symmetrically decreased. On the 20th December the anæsthesia only extended to four inches behind line of toes, by the middle of January only the toes were involved, and at time of writing (end of January) there is only slight anæsthesia of terminal phalanges left, and the pains have ceased to trouble. He is also fat and sleek, and has gained 12lbs. in weight compared with his weight before his illness.

Diagnosis.—Captain J. T. Calvert, Civil Surgeon of Bhagalpur, kindly saw the case with me and agreed to a diagnosis of peripheral neuritis. As to the origin of the neuritis this is a more difficult matter. The usual causes of neuritis are poisons such as lead, arsenic or alcohol, or the toxins of infectious diseases such as diphtheria, variola, typhoid, septicæmia, beriberi, leprosy and malaria (Bastian.) Arsenic may certainly be excluded as the patient never received any during his time in jail,—so may alcohol and other poisons. The diagnosis is thus narrowed down to leprosy or malaria. I very carefully examined him for any traces of leprosy but found absolutely none. So with some hesitation I have come by a process of exclusion to look upon malaria as being the antecedent cause.

Malaria is too easy and comfortable a factor in tropically ætiology to be altogether satisfactory, but the history of this case pointed strongly to it. The history of fever in Purnea and in this jail, the anæmia and enlargement of spleen are sufficient evidence of pre-existing malaria. I may add that with my 1/6" lens I could not satisfy myself as to the existence of the malarial parasite in the blood either during the attack of fever or during the post-febrile neuritis.

I have recently called attention in this *Gazette* to some cases of "malarial neuritis" described by Dr. Campbell Hight of Bangkok, Siam (*vide Journal of Tropical Medicine*, November 1898). These, though not absolutely convincing, are with difficulty to be ascribed to

any other origin than malaria. They were certainly not Beri-beri; nor was this case. On turning to the standard authorities we find very little about neuritis associated with or due to malaria. Bastian admits malaria as a cause of multiple neuritis. Romberg went so far as to describe an "intermittent paraplegia" of a tertian and quartan type amenable to quinine. It is impossible to be other than sceptical about such cases or about a "remittent diarrhoea" curable only by quinine as Dr. Highet describes (*loc. cit.*). Laveran is openly sceptical about neuritis or other forms of so-called "masked malaria" (*Traité du Paludisme*, 1898, p. 199). He never met such cases in his five years' study of malaria in Algiers. Davidson (*Hygiene of Warm Climates*, p. 186) only briefly refers to "motor and sensory disturbances" following malarial attacks. Manson says still less, referring only to malaria "that refuge for ignorance" in describing the diagnosis of Beri-beri. Yet on the other hand, we have Strachan (*Practitioner*, November 1897, *vide also Indian Medical Gazette*, p. 32, 1898) describing an endemic form of neuritis, which is not Beri-beri, as common in malarial Jamaica and recently Dr. A. James described some cases in the *British Medical Journal* (8th May 1897). It is obvious therefore that it is still a question open to argument. I conceive that malaria may act as an exciting cause of neuritis in two ways, either by the deposit in the peripheral nerves of the parasites or of melanin, or by producing profound anæmia. This is just as possible as for neuritis to be produced by lead, alcohol, arsenic bisulphide of carbon, or the toxins of infectious diseases.

RADICAL CURE OF HYDROCELE BY INCISION AND EVERSION.

By J. J. PRATT,

MAJOR, I.M.S.,

Civil Surgeon, Naini Tal.

In *The Indian Medical Gazette* of August 1898, I published an account of the operation for the radical cure of hydrocele of the tunica vaginalis by incision and eversion of the sac. From the 9th of February 1898, the date on which I first performed the operation, up to the 16th of January 1899, one hundred and twenty-eight cases of hydrocele (65 single and 63 double, or a total of 191 hydroceles) have been treated by this method in the Fyzabad Sadar Dispensary alone, the operators being Major W. G. Alpin, I. M. S., Assistant-Surgeon Munna Lall, and myself. The results obtained have been in every way satisfactory, and are sufficient to warrant us in the belief that the operation is the best, simplest and most easily and rapidly performed yet introduced for the cure of hydrocele.

Hæmorrhage is nil; no drainage tubes are required; and in the last 61 cases, acting on a valuable suggestion from Colonel G. C. Hall, I. M. S., I have dispensed with the buried suture formerly used to unite the edges of the tunica behind the epididymis. A probable source of irritation has thus been discarded, and the evil effects of pressure of any kind on the delicate structures of the epididymis avoided. It has been found that if the eversion of the tunica is carefully carried out, and every precaution taken in the replacement of the organ in the scrotum and the subsequent application of the St. Andrew's Cross bandage, there is no likelihood of re-inversion taking place.

The average stay of each patient in hospital has amounted to 13.5 days only. Those patients who have proved amenable to reason and content not to move from their beds for any purpose until allowed (and this, as every surgeon in India knows, is always the difficult point with native patients) have as a rule been discharged cured within ten days. Small local abscesses in a few cases delayed recovery before the use of the intrascrotal suture was dropped, but in the last sixty cases have been almost unknown.

Many cases operated on at the beginning of the year are now available for observation, and it is not too much to say that in the great majority it would require a very careful examination to discover that an operation had ever been performed, the testicle being of normal size and freely moveable in the scrotum, and the scar of the skin incision almost invisible.

A French surgeon, M. Delore, who appears to have been working on the same lines as myself, recommends an operation which seems to amount to an excision of the anterior part of the tunica with eversion of the remaining flaps—a procedure practically identical with that recommended for the treatment of very large hydroceles in the concluding paragraph of my note in *The Indian Medical Gazette* of August last. Further consideration and experience have, however, led me to the conclusion that it is rarely, if ever, advisable to cut any portion of the sac. Even in the largest hydroceles, where the tumour exceeds an average football in size, the redundant serous membrane after eversion appears to slowly shrink away until eventually the size of the testicle is but little in excess of the normal. A modified excision such as that recommended by M. Delore, carries with it most of the disadvantages of excision pure and simple. The operation will be considerably more prolonged than in 'incision and eversion'; a certain amount of hæmorrhage will be unavoidable; ligatures will be required and will be shut up in the scrotum; a drainage tube cannot be dispensed with, and early disturbance of the dressings will consequently be necessary. Incision and eversion offers certain cure with the minimum amount of risk to the patient.

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instead of proliferation; ~~amoss~~ the entire sec-
tion was of dense fibrous scar-like tissue, and
shewed no marked granuloma, but a slight round-
celled infiltration which I thought due to irri-
tation in the neighbourhood of an ulcerated
patch.

Dr. Daniels (c) has written taking exception
to some points in Dr. Galloway's description (d),
and points out that the elongation of the inter-
papillary processes is by no means characteristic
or essential, and that this layer may be so
thinned as to be quite flat. He also regards the
sclerotising factor as an essential feature and
proposes the name I have above adopted.

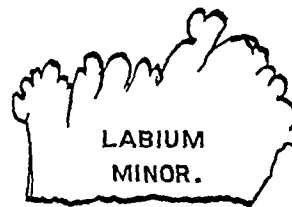
I have since found an old section from another
part of the same tumour which I shewed Dr. Gal-
loway. This quite conforms to Dr. Galloway's
"type" in the extent of round-celled growth, in
the length of the interpapillary processes, and
especially in the "pigment dust-storm" to which
he drew attention.

I have not had the fortune to see a case since
I learned of the Guiana disease, but I am mak-
ing efforts to trace this case as the growth was

only partially removed. If found, I shall have
her photographed and try to send her to Cal-
cutta, if possible, during Dr. Daniel's visit, and
get his opinion on the case.

CASE VI.—Hindu F., aged 37. No evidence of
syphilis. The right labium major is hypertro-
phied and covered with a fine nodular growth
presenting the appearance of a piece of mam-
millated hæmatite. The nodules are smooth,
shiny, covered with epithelium, firm and closely
packed together. They vary in size from a
No. 8 shot to a small marble, the majority being
the size of a small buckshot. The inner surface
is pale and smooth from pressure against a smal-
ler growth on the left labium.

The labia minora are enlarged, flattened, pale
in colour except on the margin which is crenated
by the small tumours which compose it. The
figure is a tracing of the outline of one when
removed. Both were of fairly uniform thickness,



about quarter inch. A
bridge of similar new
growth, more finely
mammillated, joined
the labia across the
mons and extended a
short distance along
the folds of the groin.

The growth felt firm and fibroid, and present-
ed little ulceration, considering the strong stench
from accumulated 'smequra' and dirt. The ulce-
ration was mainly in the crevices between the
nodules, and on the opposed surfaces of the labia,
suggesting an intertriginous origin.

The growth formed a valve over the urinary
meatus making the patient retromingent, and
spraying the urine over the anus and buttocks.

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any other origin than malaria. They were certainly not Beri-beri; nor was this case. On turning to the standard authorities we find very little about neuritis associated with or due to malaria. Bastian admits malaria as a cause of multiple neuritis. Romberg went so far as to describe an "intermittent paraplegia" of a tertian and quartan type amenable to quinine. It is impossible to be other than sceptical about such cases or about a "remittent diarrhoea" curable only by quinine as Dr. Highet describes (*loc. cit.*). Laveran is openly sceptical about neuritis or other forms of so-called "masked malaria" (*Traité du Paludisme*, 1898, p. 199). He never met such cases in his five years' study of malaria in Algiers. Davidson (*Hygiene of Warm Climates*, p. 186) only briefly refers to "motor and sensory disturbances" following malarial attacks. Manson says still less, referring only to malaria "that refuge for ignorance" in describing the diagnosis of Beri-beri. Yet on the other hand, we have Strachan (*Practitioner*, November 1897, *vide also Indian Medical Gazette*, p. 32, 1898) describing an endemic form of neuritis, which is not Beri-beri, as common in malarial Jamaica and recently Dr. A. James described some cases in the *British Medical Journal* (8th May 1897). It is obvious therefore that it is still a question open to argument. I conceive that malaria may act as an exciting cause of neuritis in two ways, either by the deposit in the peripheral nerves of the parasites or of melanin, or by producing profound anaemia. This is just as possible as for neuritis to be produced by lead, alcohol, arsenic bisulphide of carbon, or the toxins of infectious diseases.

RADICAL CURE OF HYDROCELE BY INCISION AND EVERSION.

By J. J. PRATT,

MAJOR, I.M.S.,

Civil Surgeon, Naini Tal.

In *The Indian Medical Gazette* of August 1898, I published an account of the operation for the radical cure of hydrocele of the tunica vaginalis by incision and eversion of the sac. From the 9th of February 1898, the date on which I first performed the operation, up to the 16th of January 1899, one hundred and twenty-eight cases of hydrocele (65 single and 63 double, or a total of 191 hydroceles) have been treated by this method in the Fyzabad Sadar Dispensary alone, the operators being Major W. G. Alpin, I. M. S., Assistant-Surgeon Munna Lall, and myself. The results obtained have been in every way satisfactory, and are sufficient to warrant us in the belief that the operation is the best, simplest and most easily and rapidly performed yet introduced for the cure of hydrocele.

Hæmorrhage is nil; no drainage tubes are required; and in the last 61 cases, acting on a valuable suggestion from Colonel G. C. Hall, I. M. S., I have dispensed with the buried suture formerly used to unite the edges of the tunica behind the epididymis. A probable source of irritation has thus been discarded, and the evil effects of pressure of any kind on the delicate structures of the epididymis avoided. It has been found that if the eversion of the tunica is carefully carried out, and every precaution taken in the replacement of the organ in the scrotum and the subsequent application of the St. Andrew's Cross bandage, there is no likelihood of re-inversion taking place.

The average stay of each patient in hospital has amounted to 13.5 days only. Those patients who have proved amenable to reason and content not to move from their beds for any purpose until allowed (and this, as every surgeon in India knows, is always the difficult point with native patients) have as a rule been discharged cured within ten days. Small local abscesses in a few cases delayed recovery before the use of the intrascrotal suture was dropped, but in the last sixty cases have been almost unknown.

Many cases operated on at the beginning of the year are now available for observation, and it is not too much to say that in the great majority it would require a very careful examination to discover that an operation had ever been performed, the testicle being of normal size and freely moveable in the scrotum, and the scar of the skin incision almost invisible.

A French surgeon, M. Delore, who appears to have been working on the same lines as myself, recommends an operation which seems to amount to an excision of the anterior part of the tunica with eversion of the remaining flaps—a procedure practically identical with that recommended for the treatment of very large hydroceles in the concluding paragraph of my note in *The Indian Medical Gazette* of August last. Further consideration and experience have, however, led me to the conclusion that it is rarely, if ever, advisable to cut any portion of the sac. Even in the largest hydroceles, where the tumour exceeds an average football in size, the redundant serous membrane after eversion appears to slowly shrink away until eventually the size of the testicle is but little in excess of the normal. A modified excision such as that recommended by M. Delore, carries with it most of the disadvantages of excision pure and simple. The operation will be considerably more prolonged than in 'incision and eversion'; a certain amount of hæmorrhage will be unavoidable; ligatures will be required and will be shut up in the scrotum; a drainage tube cannot be dispensed with, and early disturbance of the dressings will consequently be necessary. Incision and eversion offers certain cure with the minimum amount of risk to the patient.

NOTES ON SKIN DISEASES:

SCLEROTISING GRANULOMA OF THE PUDENDA.

BY

ARTHUR POWELL, F.R.C.S.

Cachar.

I HAVE met with five or six cases of a disease which seemed to me distinct from anything, described previous to Major J. A. Cunningham's account at the Indian Medical Congress in 1894 (a).

Our cases seemed quite similar, and I have always since thought of the disease as "Cunningham's Tumour" and called it so in my notes.

I regarded it as a sclerotising, possibly keloid degeneration of some new growth, the situation of the tumour suggesting elephantiasis, though the filarian and that disease does not prevail in either of our districts.

In 1896 I had the pleasure of seeing Dr. Galloway's beautiful preparations, and also lumps of the growth sent from Guiana, and I think pieces from Dr. Pringle's case.

Drs. Daniels and Conyer's (b) account of the disease, their photographs, and especially the microscopic appearance of the tumours convinced me that Cunningham's and my cases were of the same nature.

I got a section from one of my cases and shewed it to Dr. Galloway. We both came to the conclusion that histologically they were distinct as in my slide there was thinning of the epidermis instead of proliferation; almost the entire section was of dense fibrous scar-like tissue, and shewed no marked granuloma, but a slight round-celled infiltration which I thought due to irritation in the neighbourhood of an ulcerated patch.

Dr. Daniels (c) has written taking exception to some points in Dr. Galloway's description (d), and points out that the elongation of the interpapillary processes is by no means characteristic or essential, and that this layer may be so thinned as to be quite flat. He also regards the sclerotising factor as an essential feature and proposes the name I have above adopted.

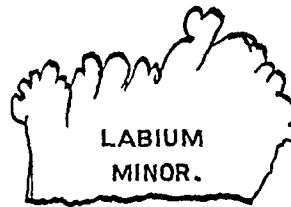
I have since found an old section from another part of the same tumour which I shewed Dr. Galloway. This quite conforms to Dr. Galloway's "type" in the extent of round-celled growth, in the length of the interpapillary processes, and especially in the "pigment dust-storm" to which he drew attention.

I have not had the fortune to see a case since I learned of the Guiana disease, but I am making efforts to trace this case as the growth was

only partially removed. If found, I shall have her photographed and try to send her to Calcutta, if possible, during Dr. Daniel's visit, and get his opinion on the case.

CASE VI.—Hindu F., aged 37. No evidence of syphilis. The right labium major is hypertrophied and covered with a fine nodular growth presenting the appearance of a piece of mammillated hæmatite. The nodules are smooth, shiny, covered with epithelium, firm and closely packed together. They vary in size from a No. 8 shot to a small marble, the majority being the size of a small buckshot. The inner surface is pale and smooth from pressure against a smaller growth on the left labium.

The labia minora are enlarged, flattened, pale in colour except on the margin which is crenated by the small tumours which compose it. The figure is a tracing of the outline of one when removed. Both were of fairly uniform thickness,



about quarter inch. A bridge of similar new growth, more finely mammillated, joined the labia across the mons and extended a short distance along the folds of the groin.

The growth felt firm and fibroid, and presented little ulceration, considering the strong stench from accumulated 'sinequa' and dirt. The ulceration was mainly in the crevices between the nodules, and on the opposed surfaces of the labia, suggesting an intertriginous origin.

The growth formed a valve over the urinary meatus making the patient retromingent, and spraying the urine over the anus and buttocks.

The right major and both smaller labia were removed, skewers were passed below the larger labium and surrounded by a rubber band in anticipation of hæmorrhage which was, however, not excessive.

The raw surface granulated over rapidly. The patient was satisfied with the result of the operation, as she was able to keep the parts clean and make water in a straightforward manner.

With Dr. Daniel, I think it a pity to adopt the adjective, "ulcerating", as characteristic of this disease. Ulceration occurs in most if not all of the infective granulomata, tubercle, lepra, syphilis, mycetoma, actinomycosis, glanders, and (?) yaws, yet we do not think it necessary to use the adjective to indicate this possibility. Unfortunately once given, a bad name seems to (e) stick to a disease, as firmly as to the proverbial dog. This unhappy name has, I fear, lead some writers into error.

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(f.) *ib.* May 1898.

rating *granuloma*, as he mentions *no new growth* previous to the ulceration.

The same remark would apply to Colonel Maitland's cases (*g*), though a critic, (*h*) considers them similar to the *granuloma* of Guiana. Apart from their origin as soft sores or suppurating buboes, they are rather ulcers of a high granulative character than new growths breaking down by ulceration.

I cannot follow Major Cunningham's argument that localisation to the pudenda indicates a syphilitic, presumably tertiary origin.

CANTHARIDES AS A HÆMOSTATIC IN HÆMATURIA.

By W. H. HENDERSON,
LIEUT.-COL., I.M.S.,

Goculdass Tejpal Hospital, Bombay.

THE efficacy of small doses of tincture of cantharides as a hæmostatic in hæmaturia is brought to notice by Drs. Bevan and Goff, in the *British Medical Journal* of the 17th September and the 19th of November last. Having successfully tried it in a case which came under my care, I can vouch for its value and for the rapidity with which it checked the hæmorrhage.

The details of my case are as follows:—

P. C., a Par-see, aged 52 years, a clerk in a mercantile office, consulted me in November last, for severe and persistent hæmaturia. On my visiting him he presented me with a sheaf of prescriptions of every known hæmostatic. He stated that he had suffered from September 1896, from which date hæmorrhage had occurred periodically, returning every six weeks or month, and occasionally not ceasing altogether between the graver attacks. The paroxysm for which he consulted me was very severe.

The urine was almost black in colour and on microscopic examination the field was crowded with blood corpuscles. The patient was very depressed and anæmic and complained of a general feeling of weakness and loss of appetite. I examined the bladder with the sound. There was no stone nor was any abnormality detected. Palpation over the region of the kidneys elicited no pain or demonstrated any enlargement of these organs.

I prescribed 5 minim doses of the tincture of cantharides daily. After the first three doses the urine cleared and on the morning of the third day, *i.e.*, after he had taken 7 doses, the change was most marked. The midday dose was discontinued and the medicine gradually dropped, leaving the urine perfectly clear and healthy. Some time afterwards he was put on a mixture

of iron and nux vomica. His general health improved, and he had no return of his urinary troubles.

The result of this case was as satisfactory as it was in the cases above mentioned, which I think must be attributed, after the failure of numberless other drugs, to the tonic effect of the cantharides on the kidney.

TWO CASES OF POISONING BY OLEANDER (*NERIUM ODORUM*)

REPORTED BY

KALIMOHUN SEN, L.M.S.,
Assistant-Surgeon, Bengal.

On the 24th November 1898, at about 10 A.M., two men belonging to the Lalbazar Fire Brigade, were admitted into the Calcutta Police Hospital with the following history: They had long been suffering from pains in the loins for which they were advised by a friend to take decoction of the roots of Oleander with whitish flowers. Accordingly they made a strong decoction of Oleander roots the previous night, and drank each a cupful of it next morning, at about 7 A.M. (24th November 1898). Shortly after drinking, they were seized with vomiting, and had vomited several times before they came to hospital.

CASE I.—Sheik Rahaman, Mahomedan male, aged about 50 years.

Condition on admission.—Quite conscious, able to speak and swallow. Complained of no pain, but there was evidently irritation of the stomach as he had vomited several times before coming, and also in hospital. The vomit was yellowish, frothy liquid. Pulse small, soft but regular, and slow about 60 per minute. Respiration normal, eyes congested, pupils unequal, the right one being contracted.

An emetic of half a drachm of sulphate of zinc was at once given him which caused him to vomit three or four times. It was thought advisable to use stomach pump by means of which stomach was thoroughly washed out. After this, half an ounce of rum with equal quantity of water was given; and he was put to bed and watched constantly.

At 12 noon the patient began to be drowsy and twitchings of the muscle of the hands was noticed. By 1 P.M. there were spasms best marked in the muscles of the face and upper extremities, but slight in the legs. There was no lockjaw, but absolute dysphagia, and inability to swallow anything. He could not speak but appeared to understand what was said and frequently smiled vacantly. Conjunctiva sensitive and the left pupil dilated. Pulse very slow and small, about 50 per minute. Respiration hurried. By 2 P.M. there were tonic convulsions of all the muscles of the body,

(*g*.) Brit. Journal Dermatology, Nov. 1898.

(*h*.) Manson, "Tropical Diseases," Colcott Fox, "Med. Annual," 1898. Buchanan, Ind. Med. Gazette, Dec. 1898, have all adopted the term "Ulcerating." Fox, as an affix in brackets.

especially of the upper extremities, but without lockjaw; and he was stretching out his hands as if to catch something.

A mustard plaster was applied over the heart, stimulant enema of 2 oz. of rum, 10 grains of ammon. carb. with water up to 4 oz. given, and repeated after half an hour with result of clearing bowel. Pulse became quicker, about 84 per minute; and the respiration hurried.

3 P.M.—The whole body was rigid and there was lockjaw. Fingers twitching, thumb bent towards the dorsum, but the other fingers towards the palm. Neck bent towards the right. Froth coming out of the mouth. Conjunctiva sensitive, pupils unequally dilated, the left being larger.

3-30 P.M.—Body rigid like a board. Fingers straight and less rigid. Head bent backwards. No lockjaw. Eyes widely open, congested and watering, pupils still unequally dilated. Pulse frequent, about 100 per minute and fuller in volume. Respiration hurried, about 70 per minute. Stimulant enema repeated.

6-30 P.M.—Rigidity less in the lower extremities. Patient perspiring freely. Pulse frequent but small, about 96 per minute. Respiration hurried, about 60 per minute. Conjunctiva sensitive and pupils same. Stimulant enema was repeated at 7 P.M.

9 P.M.—Upper extremities rigid. Lower extremities flaccid. Breathing hurried and stertorous. Pulse frequent and small. Conjunctiva sensitive. Stimulant enema repeated at 9-30 P.M.

12-30 A.M.—Condition same, but the body was not so rigid.

5-30 A.M.—Breathing stertorous. Pulse imperceptible at the wrist, conjunctival reflex almost absent, eyes widely open, turned up and congested, cornea dry. Battery applied. Hypodermic injection of spt. ether sulph. m. xx given. Stimulant enema repeated.

6-30 A.M.—Condition same. Two hypodermic injections of 30 minims of spt. ether sulph. each given.

7-30 A.M.—Condition same. Hot bottles to the extremities and flanks.

Patient died at 8-46 A.M.

A post-mortem examination was held at 12-30 P.M. with the following result:—

Rigor mortis well marked. Body still warm to the touch. Right pupil a little smaller than the left. Thumbs resting against fingers.

Lungs.—Adherent behind and very congested with fluid-blood.

Heart.—Right side full with fluid blood, left side nearly empty; spots of subendocardial hæmorrhage on front wall, and towards apex on both walls.

Liver, spleen and kidneys congested.

Stomach.—Contents about $1\frac{1}{2}$ oz. of greenish yellow fluid and much mucus, no smell, stomach

in folds with tops congested, mucous membrane congested, especially along the lesser curvature.

Small intestines.—Contents yellow mucus, slight congestion of upper part of duodenum and a few scattered spots of congestions.

Large intestines.—Healthy, contained liquid fæces.

Brain.—Healthy.

Trachea.—Congested and frothy liquid in the bronchi.

CASE II.—Sheik Mowla Bux, a Mahomedan, aged about 25 years, presented the following conditions on admission:—

Quite conscious, able to speak and swallow. Complained of no pain, but had vomited several times before coming, and two or three times in hospital. The vomit was clear fluid with portions of betel-leaves which he had been chewing in large quantities. Eyes not congested, but the left pupil dilated. Pulse moderately full and about 70 per minute. Respiration normal. General appearance not noticeable, except that he did not like to be disturbed.

Treatment.—Same as in the first case, i.e., emetic of half a drachm of sulphate of zinc which produced two or three vomitings; stomach pump introduced, and stomach washed out thoroughly. Patient was put to bed and watched.

4-30 P.M.—Vomited some yellow-tinged glary mucus. Pulse slow, about 60 per minute. Respiration normal. Other conditions same. Rum half an ounce, and ammon. carb. 5 grains with water up to one ounce given.

6-30 P.M.—Patient began to get twitchings of the muscles of hands. Quite conscious and able to speak and swallow, but expressions vacant. Pulse slow and small, about 50 per minute. Respiration hurried, about 24 per minute. Both pupils dilated, conjunctiva sensitive. The same stimulant mixture repeated.

7 P.M.—He began to laugh, and to get spasms of the muscles of the upper extremities and trying to get out of bed, but could not speak or swallow anything. Pulse same as before, i.e., slow and small, about 50 per minute. Respiration hurried, about 30 per minute. Pupils dilated. Expression vacant. Stimulant enema of 2 ounces of rum and 10 grains of ammon. carb. with water up to 4 oz. was given, and ordered to be repeated every 2 hours.

7-30 P.M.—Spasms less and patient was quieter.

9 P.M.—Spasms of the muscles of the upper extremities. Pulse quicker, about 65 per minute; respiration hurried; bladder distended as he could not pass water. Bladder relieved with catheter.

12-30 A.M.—Fingers twitching, head bent towards the right. Pulse fuller and quicker, about 70 per minute. Respirations hurried, about 35 per minute.

5-30 A.M.—Spasms of all the muscles of the body. Lockjaw present. Hands clenched.

Eyes open and turned up, pupils dilated. Pulse and respiration same, *i.e.*, about 70 and 35 per minute respectively. Stimulant enema repeated and bladder relieved.

6-30 A.M.—General convulsions and the body bent like an arch (*opisthotonus*). Head turned towards right, no lockjaw, arms extended and rigid. Eyes turned up and open. Passed a yellow semi-solid stool.

7-30 A.M.—Patient was moving his head from side to side. Lockjaw present. Tongue protruding and pressed against the teeth. Patient did not seem to be altogether unconscious as he closed his eyes if fingers were brought near them. Pupils dilated, pulse small and about 70 per minute. Respiration hurried, about 40 per minute. An enema of soap-water with castor oil given. The same stimulant enema to be continued every 3 hours.

10 A.M.—Patient quiet, no rigidity of the muscles except in the lower jaw which was a little stiff. Eyes open, pupils dilated and responded to light. Expression still vacant. Pulse very feeble and compressible, about 72 per minute. Respiration hurried, about 48 per minute. Patient seemed to feel when pinched.

11-30 A.M.—Stimulant enema repeated and bladder relieved with catheter.

2 P.M.—Patient was sleeping.

5-30 P.M.—There was a slight rise of temperature (99.4 F.) Pulse fuller and about 96 per minute. Respiration about 36 per minute. Patient was drowsy, tried to speak but could not do so and responded to questions by gesture and put out the tongue when told to do so. Pupils dilated. No rigidity in muscles. Bladder relieved.

7-20 P.M.—Patient could swallow and took about an ounce of rum, 3 ounces of soup and 2 ounces of milk.

11 P.M.—Patient could not swallow again, and so the stimulant enema was repeated. Other conditions same.

3 A.M. on 26th.—Stimulant enema repeated and bladder relieved.

6 A.M.—Patient could speak now. Pulse 72 per minute. Respiration 24 per minute. Pupils still dilated, but less than before. No spasm or rigidity of the muscles, but he appeared dull and morose. Took medicine and nourishment. Half an ounce of rum with milk and soup was given every 3 hours; could not pass water during the day, so bladder had to be relieved, passed water at night.

27-11-98.—Pulse again became slow, about 50 per minute. Respiration 22 per minute. Patient still dull and morose. Took nourishment well.

28-11-98.—Pulse still hard and slow, about 50 per minute. Patient still dull and morose, and appears not to like to be disturbed. Sat up a little in bed.

29-11-98.—Pulse 66 per minute. Complained of giddiness. Tongue dry, coated in the centre and red and irritable in the margins.

30-11-98.—Pulse 72 per minute. Patient less morose. Tongue still dry, but less coated. Walked a little in the evening.

Henceforth the patient progressed steadily. There was a little rise of temperature (about 100° F.) in the evening for some days. Discharged cured on the 15th December 1898.

The report of the Chemical Examiner on the analysis of the vomited matter and washings of the stomach of both these men, and of the viscera of the fatal case showed the presence only of "a narcotico-irritant principle producing vomiting, weakness of heart, general uneasiness and drowsiness, but no twitchings or convulsions." Only these general physiological effects were reported, for *Neriodorin* and other poisonous alkaloids of the *Nerium* plants have got no special chemical tests.

[For other cases of this rare form of poisoning see Lyon's *Medical Jurisprudence for India*, pp. 296, 297, 461-462.—Ed.]

A Mirror of Hospital Practice.

CASE OF TRAUMATIC DIAPHRAGMATIC HERNIA.*

By

MR. NARAYANA SWAMY,
Madras.

A YOUNG man of 21 years was admitted into the Native Infirmary, Royapuram, on the 28th February 1898, at 4 P.M., for severe injury to the back sustained whilst at work in the Railway Workshop at Royapuram. It was said to have been caused in the following manner: The patient and a few other coolies were engaged in raising a very heavy bunk to fix it to a railway carriage, he supporting the centre of it on his back; and while doing so the coolies accidentally let go their hold, with the result, that the patient fell prostrate on the floor under the heavy weight of the bunk, sustaining the fatal injury. He was immediately conveyed to the hospital for treatment.

I saw the patient on the following morning, nearly 15 hours after the receipt of the injury. He was in a collapsed condition; pulseless at the wrist; skin cold and clammy; breathing hurried and shallow, nearly 50 in a minute; face anxious, pale and pinched; abdomen was distended but the distension was peculiar, inasmuch as it was particularly confined to the upper part about the umbilicus which was tym-

* Read before the S. Indian Branch of British Medical Association.

panitic on percussion; and this tympanitic sound was also elicited all over the right chest. Lower limbs were first completely powerless, but later on the patient was able to flex his knees thus revealing no damage done to the spinal cord except concussion. There was an immense swelling occupying the lower portion of the dorsal and upper portion of the lumbar regions (on which the bunk fell), the tissues of which were severely contused. A careful examination failed to discover any fracture of the spine or ribs. The bladder was twice relieved by a catheter. The patient complained of difficulty of breathing and pain in the abdomen and right side of chest. There was neither nausea nor vomiting. Internal hæmorrhage being suspected ice bags were applied to the injured parts and stimulants were administered. The patient gradually grew worse and died at 10 A.M. on the 1st March 1898, evidently from the effects of severe shock.

An inquest was held on the following morning, nearly 21 hours after death. I witnessed the *post-mortem* conducted by Mr. H. S. Halge, Resident Apothecary of the Hospital, and found a large rent in the muscular portion of the costal attachment of the right half of the diaphragm about 2 inches from the anterior medial line. It was almost circular, about $8\frac{1}{2}$ inches in circumference and nearly 3 inches in diameter. A large number of coils of distended small intestines (jejunum and a portion of ileum) protruded through the lacerated diaphragm and entered into the right pleural cavity, reaching as high as the 2nd rib, compressing the right lung against the posterior thoracic wall which was completely collapsed and considerably congested. The hernial portion of the intestines also presented a slightly congested appearance but not that of strangulation; the length of the protruded intestine being nearly 13 feet. The stomach was enormously distended. A large quantity of clotted blood was found behind the peritoneum surrounding the lower portion of the ascending colon, evidently due to rupture of some of the branches of the superior mesenteric artery. Considerable amount of extravasated blood was discovered in the right half of the hypogastric region between the peritoneum and the transversalis fascia. The sternal end of the 4th right rib was fractured without the slightest displacement of the broken fragments. Pelvic bones were entire, and all the other abdominal and pelvic organs were normal.

Diaphragmatic herniæ are universally accepted as extremely rare, and the traumatic variety of this special hernia is rarer still. This fact is supported by the record of only 5 cases in the last 20 volumes of the *British Medical Journal*. Not one of these is a traumatic diaphragmatic hernia. The importance and interest, therefore, of the case now reported to the meeting depend upon its extreme rarity.

TWO CASES OF ABDOMINAL SECTION WITH UNUSUAL COMPLICATIONS.*

By F. J. CRAWFORD, M.D.,

ACTING SUPERINTENDENT,

Government Maternity Hospital, Madras.

CASE No. 1.—Ovarian cystoma; double twist of the pedicle; ascites; peritonitis; adhesions:—

M., a married Hindu woman, 35 years of age, with five children, was confined, six months before admission, of her fifth child without difficulty. She nursed the child up to one fortnight ago and had no period during this time. Menstruation previously as a rule rather free, lasting nine or ten days. She was admitted on May 28th, 1898, with an abdominal tumour, of which her account was meagre and vague like so many of this class of cases. Three months ago she noticed a lump on the lower part of her abdomen, more on the right than the left side. It gradually enlarged without pain or fever, according to her statement and that of her husband. No discharge occurred from the vagina, no constitutional troubles of any kind were felt by the patient. On admission, she presented all the signs of an ovarian cystoma, the tumour giving a distinct thrill on tapping with the finger. It was irregular, being situated more on the right than the left side, no pain except on pressure, when it was slight; the greatest girth of the abdomen was 34 inches. There was difficulty of breathing, feeble pulse, anæmia, emaciation and debility, as the result evidently of the adventitious growth occurring in a weakly constitution. There was no anasarca, though the urine was scanty; ill-defined pains shooting down the legs were complained of, especially at night. The temperature ranged between 98.6 and 100.2. Before operation the normal was never reached. On admission, the temperature was 100° F. and the pulse 112 per minute. There was no history of rigors or of severe pain.

The abdomen was as large as a seven months' gestation. On vaginal examination, the cervix was found to be small and flush with the vaginal roof, the anterior vaginal wall pushed down somewhat. The uterus was high up and could not be felt by the finger, and it was slightly lengthened. There was no discharge from the passages. The abdomen was slightly tender on palpation, and there was to the touch a feeling communicated of a certain quantity of fluid there apart from the cystoma. The patient was very weak and anæmic, and evidently not in a fit condition to undergo a serious operation; so she was kept in hospital and fed carefully. During this period (about six weeks) though the pulse improved and the girth diminished

* Read before the S. Indian Branch of British Medical Association.

slightly, the temperature chart showed evening rises and morning falls, and the general condition remained feeble. The urine, however, under treatment, became almost normal in quantity.

On the 12th July, the usual incision was made in the median line below the umbilicus, and the peritoneum rapidly came down upon. It was then found that this membrane was so intimately adherent to the anterior wall of the tumour that considerable difficulty was experienced in defining the limits of the latter. These adhesions were present over a large area, and until the hand reached the outer limit of this area all round, much dissection of the wall of the cyst necessarily took place. The tumour was then seen to be greatly degenerated, almost black in colour, the wall was thick and softened, it readily split up into layers, and broke down under the gentlest manipulation. After the adhesions were dealt with, the tumour was evacuated in the ordinary way, but difficulty was encountered in doing this cleanly on account of the friability of the cyst wall, the trocar making a rough tear on piercing it. A similar difficulty occurred later when the edges of the opening were caught up by forceps. The tumour was multilocular and the contents colloid. On attempting to draw out the cyst wall, the omentum was seen to be connected with it above and on each side, the whole forming one adherent mass, and a large portion of the omentum had consequently to be removed with the cyst. The peritoneum was inflamed everywhere; it was thickened and much altered in appearance at the site of the adhesions and readily bleeding at numerous points. The pedicle could now be examined. It was double twisted and thin and had a rotten appearance. One small Wells' forceps easily controlled it and on removing this, only slight oozing occurred from some connective tissue round the pedicle. The patient was now in a very low state, the pulse which should improve during this operation, remained feeble, the skin had a cold, clammy perspiration, and brandy was required. There was in fact fear of the patient not reaching the ward at all, so the operation was rapidly finished after the peritoneal cavity was sponged out, not a trace of the cyst contents being left behind. At the site where the tumour adhered, the peritoneum was oozing freely; no bleeding points could be secured, so firm pressure was kept up and a glass drain placed with its end in Douglas' pouch. During the operation, which lasted exactly one hour, about one pint of blood-stained peritoneal fluid was removed. Though the peritoneum was seen to be implicated, some of the rotten wall of the cyst had to be left adherent on account of the low condition of the patient. Though the cyst wall itself did not bleed, the peritoneum when it was separated, oozed freely and a very

large oozing area would have been left if clean removal was done. Whether another half an hour taken up in this clean removal would have been immediately fatal or not, the remains of the cyst wall left behind were, I think, the cause of the fatal result. The total weight of the tumour was about 15lbs. During the day the patient remained low and covered with cold sweat, requiring a lot of brandy. Evening temperature reached 103°, no vomiting, very little pain, very slight tympanites; flatus passed freely by flatus tube. Nutrient enemata given every four hours. The pulse was quick and weak. The subsequent history of the case which extended over a period of eight days was one of septic poisoning. She died of double pneumonia on July 19th.

In this case most of the conditions necessary for the production of septic processes existed before operation, a rotten cyst-wall, degenerated contents, twisted pedicle, chronic peritonitis, injury to anterior layer of the parietal peritoneum. The admission of the only wanting item, namely, the germ was sufficient to precipitate these processes. This must have occurred either during operation or during the subsequent dressings, when, by means of a glass drain, serous and blood-stained fluid had to be drawn off every four hours for the first two days from the lower part of the peritoneal cavity. Without the difficulty I experienced in leaving a perfectly clean peritoneum I feel sure there would have been a different ending to the case. My four previous ovariectomies had been uncomplicated and though one tumour weighed 46lbs., no untoward symptom arose during their convalescence which was uneventful in all four cases. No *post-mortem* examination was made in this case.

CASE No. 2.—Pelvic hæmatocoele; pelvic peritonitis; rupture into the rectum; faecal fistula after operation: M., *æt.* 25, married 10 years, two children living, no abortions, six years since last confinement, had previously been in hospital under treatment for dysmenorrhœa which extended over a period of six years, menstruation regular, free, but accompanied with severe pain especially at the commencement. Retroversion was then diagnosed and a pessary relieved the symptoms. Subsequently after having a painless period, she left hospital on May 7, 1898, having been ten days under treatment. On May 26, she was re-admitted and gave the following account of herself for the interval. She remained well for ten days, and then felt, one afternoon, a severe pain in the abdomen for which a native midwife forcibly applied massage. The same night she suffered from fever, with acute abdominal pain, fits of shivering, and faintness. These symptoms continued and four days before admission to hospital, the pain became more acute still and was accompanied with vomiting at intervals. On May 25, she brought up two

round worms. She came to hospital on May 26, having had an injection of morphine a few hours before. On admission she had acute pain, especially above the pubes, where an indistinct tumour-like swelling was easily felt, reaching to about two inches below the umbilicus. It was situated more on the right side, was hard to the touch and acutely tender. The pulse was 112 to the minute, small and thready. Temperature 102°F., patient very restless, constantly tossing her arms and legs about in bed. She had constant vomiting, one round worm coming up on the evening of admission. Per vaginam a hard swelling was felt bulging down the posterior vaginal wall and pushing the uterus forwards under the symphysis pubis, where the cervix could be felt.

The patient evidently suffered from traumatic pelvic hæmatocele, and she was put on the regular treatment with rest in bed and sedatives, including morphine hypodermically. Enemas of brandy and beef broth were given at intervals. Two days after the swelling increased, extending more on the left side and higher. The temperature reached 104°F. in the evening. Poultices were applied, and the fever subsided to some extent. The patient continued in this condition having irregular exacerbations of pain; the temperature ranged from 100° to 102°, the pulse remaining very weak. On June 8, she first passed blood by the rectum; it was bright red and fluid. On the same day, in the afternoon, more was passed, and the patient became much easier, the pain being less. The pulse, however, was, if anything, weaker still. From this date the history was practically the same from day to day. Dr. Branfoot saw the case on June 26, confirmed the diagnosis and approved the expectant treatment pending an improvement in the pulse. He suspected a ruptured tubal gestation. On July 5, the temperature rose to 102°F., and the patient had a distinct rigor, and on the 8th the abdomen was opened in the middle line. The general cavity of the peritoneum was found free from inflammation, but at a level of two and a half inches below the umbilicus the peritoneum was found adherent to the small intestines beneath. Smart oozing occurred as these were cautiously broken down, easily controlled, however, by pressure. No trouble in this process was experienced till the pelvis was reached, and all the pelvic organs were found so closely matted together by their peritoneal surface that some force was required in proceeding further. The finger at about the situation of the brim of the pelvis made its way into a cavity occupying practically the whole of the pelvis; it was situated chiefly behind and on the right side of the uterus which was pushed forward and fixed by adhesions. The cavity was full of thin bloody serum and lined with black clots which were easily broken down and

brought away by the irrigator. After many clots were removed, the examining finger on making its way to the posterior wall was felt to pass through an opening with well-defined edges; this was the opening into the rectum, and at once faecal odour was perceived. The opening admitted easily the top of the index finger. The patient was now very low, and as sufficient cause was discovered for the production of all the symptoms, further exploration of the pelvic organs was abandoned. The clots were removed as far as could be, the cavity made thoroughly clean with aseptic water, and a glass drain retained in it through the abdominal opening. The immediate result of the operation was remarkably good. The temperature came down in two days to normal, pain ceased entirely, sleep was at last obtained without the aid of opiates, and patient became very comfortable. From the drainage tubes the discharge of faecal matter was free and by treatment kept odourless. The rectum was washed out with aseptic water daily, and the patient's feeding carefully supervised, as a prolonged convalescence was anticipated, while the opening in the rectum was closing, and the cavity became obliterated in some way or other. The stage was in fact reached of a rectal fistula discharging through an abdominal opening. Regularly the abdominal opening, the large cavity and the rectum were irrigated; this procedure being effectual in keeping the parts clean and practically aseptic. No doubt could be entertained, however, that the patient was in a highly dangerous state—on the brink of a precipice in fact—where the slightest relaxation of the strictest care would determine matters to a fatal issue. Reports of her condition were kept hourly, and special nurses placed in charge night and day. On the morning of July 9 (the day after operation), the temperature for the first time fell to normal, though in the same evening it went up to 102°F., the pulse improved, there was no pain. The dressing, however, required frequent changing, the faecal discharge being plentiful. On 10th evening, the temperature reached 101.4°, there being still the same local favourable condition. On this day two motions were passed by the rectum, and faecal discharge from the wound diminished somewhat. On the 11th, the motions became frequent in number, the temperature not rising above 100.6°, the general condition good. During these days small clots were passed both ways, but no blood. On the 15th, the stitches were removed from the abdominal opening, and there was excoriation round the abdominal opening as always occurs in these cases of abdominal fistulae. Boric ointment controlled it, however. On the 10th, the temperature was normal all day and night; the faecal matter diminished, the bowels were free by the rectum.

The patient had now passed the acute stage and for some days the history of the case was

uneventful, the local treatment being rigidly carried out, a small quantity of iodoform emulsion being left after irrigation, and the rectum washed out with weak boric lotion frequently during the day as well as after each motion and dressing. The excoriation round the fistula, however, gave a lot of trouble during the subsequent course of the illness and required constant attention. It was accompanied by troublesome burning, of which the patient complained a good deal as it kept her awake at night. On the 24th, a good-formed motion was passed by the rectum. The abdominal opening began about the 29th to decrease in size, a lot of odourless fæces still, however, being discharged through it, containing now some undigested milk. The strength, however, of the patient did not apparently improve, though her appetite was good; the temperature was normal all day, and the local condition excellent. On the 30th, a change for the worse set in, there was some vomiting, she became restless and hysterical, motions by the rectum ceased. On the 31st, the temperature became sub-normal; a motion was passed. At 9-30 A.M., the patient was found in a state of collapse with temperature at 97°, a cold clammy perspiration, pulseless and evidently in a hopeless condition, and she died at 10-15.

At the *post-mortem* examination the appearances were matting together of the intestines in the lower portion of the abdomen, and an opening in the anterior wall of the rectum at the situation of the sigmoid flexure, but nothing to account for the sudden death.

The case is interesting from many points of view. The usual termination of cases which rupture into the bowel is recovery with immediate relief of all symptoms. It is unusual for the bleeding to continue as in this case—the cavity is emptied at once. Indeed, if such a result did not happen, and if the surrounding organs did not accommodate themselves again when the cavity collapsed and its contents were emptied, it is very difficult to understand how recovery could subsequently take place. The pelvis is hard and unyielding, the bowels were firmly matted together, and a hard inflammatory wall established in the immediate neighbourhood; contraction cannot take place in similar cases. In future I would be inclined to predict a fatal result, though it might be delayed some weeks after apparent improvement had set in as the result of an operation.

TUBERCULOSIS AND MILK-SUPPLY.

FRESH evidence accumulates daily of the intimate relation of tuberculosis to the milk-supply, and of the risk to which the health of the community is exposed by the consumption of milk infected with the tubercle bacillus, and the need for vigorous control of our milk-supplies. Among those who were foremost in taking steps to ascertain how far the spread of tuberculosis could be referred to milk-

supply was the City Council of Liverpool, says the *Lancet*, February 11th. To the credit of one of the members of the Health Committee, Mr. Anthony Sheldermine, an investigation was started in December, 1896, when at his instance fifty samples were obtained from fifty different milk-sellers in Liverpool, and were immediately submitted to bacteriological examination by Dr. Sims Woodhead and Dr. Cartwright Wood. It may be briefly stated as the result of this investigation that of the fifty samples examined five were capable of setting up tuberculosis in guinea-pigs, and that accordingly ten per cent. of the samples of milk under examination must be regarded as being infected with the tubercle bacillus. In three of these samples, Dr. Sims Woodhead and Dr. Cartwright Wood remark, both of the animals inoculated developed tuberculosis, while in two other cases only one of the animals inoculated with the milk developed the disease. "As it is a very unusual thing for animals which have been injected with tubercular material to escape the infection, we must consider the question why half of the animals injected with these two samples escaped, and also the possibility of these animals having contracted the disease otherwise than through the samples of milk with which they were inoculated. When a set of animals are inoculated with the milk containing tubercle bacilli from a cow suffering from tuberculosis of the udder all the animals succumb to the disease. Bollinger, however, pointed out that when such a milk was diluted sufficiently (10 to 100 times) with sound milk the mixture was unable to set up the disease. He concluded from this that *the milk from a dairy, in which the milk from a large number of cows is mixed together, would probably not be rendered infective as a whole* by the presence of the tuberculous milk, but that, on the other hand, the dilution would tend to render the milk as a whole innocuous. Our knowledge of other disease organisms would certainly lead us to expect that the dilution of the infective fluid would exert great influence on its virulence since it has been proved in the case of certain pathogenic germs that a certain definite number of bacilli are necessary to infect the animal, and that where we pass much below this dose the animal may escape. It has also been shown that the dose required to infect varies greatly with different species of animals, and, no doubt, there is a considerable range in the amount required with different animals of the same species. Wyszokowsky has tried to determine the number of tubercle bacilli necessary to infect a guinea-pig. He found that from eight to thirty virulent bacilli introduced into the peritoneal cavity are necessary to bring about infection of a guinea-pig. No doubt these results are merely approximate, as much would depend on the virulence of the bacilli experimented with, and also the individual susceptibility of the guinea-pigs which can, as a rule, be quite safely ignored in an ordinary inoculation, but which would here have an opportunity of displaying itself where the quantity introduced is as small as to verge on the minimal quantity necessary for infection. Although, all the animals inoculated with the milk from a cow either develop tuberculosis or remain unaffected, according as the udder happens to be affected with the disease or to be free, this need not hold in the case of milk obtained from a dairy. It is quite possible, or even probable, for a tuberculous milk to be so diluted with other milks in a dairy as to be capable of giving rise to the disease in only a certain proportion of the animals inoculated. Under such circumstances we should expect the disease to manifest itself differently and to run a much more chronic course and this, as a matter of fact, was the case."

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THE INDIAN SECTION OF THE BRITISH
PHARMACOPŒIA OF 1898.

WE have received advance proofs of a copy of the report on the proposed additions to the new (1898) edition of the British Pharmacopœia in order to make it more suitable for use in India and the Colonies.

The proposed list is not a formidable one, nor will its inclusion in full make any remarkable difference in the British Pharmacopœia. The General Medical Council have obtained information from eleven medical bodies in India and the chief British Colonies. Seventeen other Colonies were asked, but had no suggestions to offer. The report now issued gives the list of the proposed additions and asks for more information on certain points. It contains four drugs recommended by Hongkong, seven by Australia, and 36 from India. The latter we propose briefly to notice here.

Of the 36 drugs suggested by what is called in the report the "Indian Committee," we find the majority are only put forward as substitutes for officinal drugs, not on account of any supposed superiority, but mainly because they are indigenous to India and are of apparently equal value with those already recognised. Only two new drugs are proposed, and only one is recommended to be reintroduced. First of all we have Betel (the leaves of *Piper Betel*). The use of *pān* does not surely require official recognition, nor is it easy to see what preparation of it is required. Apart from its being used in many parts of India for the purpose of mastication, it has many domestic uses, being always at hand in native homes, but we see no reason for elevating it to the dignity of an official drug. Jasmine (the flowers of *Jasmine sabar*) is also new. It is put forward as a lactifuge; the flowers can be used as a poultice to drive away breast-milk. It is well spoken of, and may be of use as a cheap substitute for extract of belladonna.

Both the Hongkong and the Indian Committees recommend the reintroduction of Bael-fruit which

existed in former editions, but was omitted from the 1898 British Pharmacopœia. We admit the value of this fruit as a laxative and antiscorbutic tonic in cases of chronic bowel complaint, but as the fruit is everywhere available, both in the fresh and dry state, we incline to doubt if the proposed liquid extract would be much prescribed.

The substitutions are the most important part of the proposed list. Most of them are to take the place of recognised bitters and tonics, and have as their only advantage the fact that they are indigenous to India. *Acalypta Indica* is put forward as a substitute for senega. In small doses it is expectorant and nauseant, in large doses emetic; it is also to some extent carminative; but we fail to see how it is to worthily replace senega. Its emetic properties would be a drawback to its use in cough-mixtures. The only objection to senega is that it is not indigenous. The authors of the *Pharmagraphics Indica* formerly suggested the use of *Polygala chinensis* or Indian milkwort. It contains, like senega, a substance closely identical with saponin.

The dried plant *Andrographis*, the stem of *Berberis aristata*, the dried plants *Exacum* and *Swertia* are all proposed in lieu of chiretta. The official chiretta (*Swertia Chiretta*), a well-known hill plant, and plentifully found in every bazar, is not so common as its proposed substitute *Swertia affinis*. The medicinal value of both is equal. As regards *Andrographis* it is much used as a household remedy in Bengal under the names *Kreat* or *Haloiva*; it was recently strongly recommended, by Brigade-Surgeon Yeates Hunter, as a substitute for quinine (*British Medical Journal*, March 7th, 1891). It is a useful bitter tonic and stomachic and may well be recognised. Barberry (*Berberis aristata*), vernacularly known as *Chitra*, is very cheap and abundant, and a decoction of the root enjoys the reputation of being equal to that of Warburgh's tincture. Its extract (*roswat*) mixed with opium is a popular application for painful eye inflammations, and a tincture was officinal in the old Indian Pharmacopœia. *Exacum bicolor* is a common plant in the Deccan, and possesses bitter stomachic properties. It will be seen therefore that all the above are useful substitutes for chiretta. Two more drugs are proposed in place of calumba, viz., the stems of *Coscinium fenestratum* and of *Tinospora cordifolia*. The former

is the yellow bitter root from a plant common in India. It contains a useful yellow dye, as well as a principle identical with *berberine*.

Tinospora is a common shrub, with a very bitter taste. It is best known by its vernacular name "Galancha." Dr. Burton Brown recommended it for chronic bladder inflammations. It is also used in intermittent fevers. We doubt, however, if *Coscinum* with its yellow dye will be a useful substitute for calumba; it will not have the advantage of the latter in making clear mixtures with the iron preparations. The wood and bark of *Samadera* is to a great extent an efficient substitute for quassia, and the root-bark of *Toddalia* equally so for cusparia or angostura bark.

The next series of drugs on the report-list are those which it is proposed to substitute for the anthelmintics in common use. These are *Butea* seeds in place of santonin, and *Embelia* instead of Koussou and Male Fern. *Butea* gum, the so-called "Bengal Kino," is to be used instead of the official kino, and it is proposed to give an infusion of *butea*, for use in place of santonin for round worms. It has the disadvantages of being nauseant and of occasionally exciting vomiting and of irritating the kidney, so we scarcely see how it will supplant for children's use the easily administered few grains of santonin. *Embelia*, which is proposed to take the place of Koussou and Filix Mas, has the same drawback of being extremely hasty to take and in this respect is no improvement. As, however, it is undoubtedly a reliable anthelmintic, it is probable that if an elegant and palatable preparation were given, it would have an extended sphere of usefulness.

We now come to the proposed oils, and are surprised to find so few recommended. *Oleum arachidis* or "Earth-nut" oil will certainly act admirably in place of olive oil in the four plasters, four ointments and three liniments in which the latter drug is now used. As a matter of fact it is nowadays largely so used in the Medical Store Dépôts (Dymock). Gingelly or Sesame oil is also valuable and will replace olive oil. It has already been recognised in the United States dispensatory. Ajowan oil (*ajwain*) is also proposed to take the place of Ol. carui, olea Anethi, Anisi and Menth. piper. The distilled water called in Madras "Onum water" has a good reputation in spasmodic bowel affections and even in cholera. No one will object to oil of lemon-grass

(Indian oil of Verbena) taking the place of oil of Cajeput or oil of Lavender in certain liniments. The dried beetle (*mylabris phaterata*) commonly called Telini-fly is proposed to take the place of Spanish fly (*cantharidis*) and is reputed to be of equal value.

So far we have written with approval of the proposed changes, but we cannot say as much for the proposal to abolish *ipecacuanha* and substitute in its stead *Mudar* and *Antamul*. The former (*calotropis gigantea*) is a well-known plant, and its chemical composition has been carefully investigated by Warden and Waddell. It enjoys a considerable reputation as a remedy for dysentery. Its chief and only advantage seems to us to be the small dose (ten grains) required. It is distinctly emetic and is an irritant poison in large quantities; and in spite of much traditional testimony in its favour, we cannot but regard it as far inferior to time-honoured *ipecacuanha*. Nor can we say more in favour of *Antamul* (*Tylophora*), though it enjoys a certain amount of repute in Madras and was admitted to the old Bengal Pharmacopœia of 1844.

On the other hand we view with favour the proposal to use *Datura* leaves instead of *folia belladonnæ*, nor will the preparation of a tincture of *datura* be objected to. The leaves are also recommended by the Hongkong Committee. The seeds also may well replace those of stramonium. *Crinum*, which it is suggested to insert in place of squills, was officinal in the Indian Pharmacopœia, and is reputed as an expectorant. A preparation of cotton root-bark is proposed to take the place of ergot. We have Dymock's authority for saying that it does act upon the uterus. That it is of value may be inferred from its inclusion in the United States Pharmacopœia of 1890.

We have thus briefly run through the list of proposed additions to the Pharmacopœia. Most of them will be admitted to be fair substitutes for drugs already official. Their chief merit is their cheapness and the fact of their being indigenous in India. There can be no doubt that the official recognition of indigenous drugs will lead to their greater use and to clearer ideas as to their value, and while we should be very sorry to see Government hospitals in India tied down to the use of certain drugs merely from semi-patriotic motives, we see only advantage in the extended use of those that are admittedly useful, and when the proposed drugs are equally valuable

with those more familiar to us, it is our duty to use them and that of the Government of India to encourage their use.

UNCLASSIFIED FEVERS OF TROPICS.

DR. CROMBIE, in opening the discussion on the Unclassified Fevers of the Tropics at the annual meeting of the British Medical Association in Edinburgh, remarked that his object was to emphasise the fact that there are certain more or less well-defined clinical types of fever recognisable in hot climates which have no place in the *Nomenclature of Diseases*. His provisional classification is as follows:—

- I. Non-specific fevers of doubtful causation, probably climatic:
 - a. Ephemeral fever.
 - *b. Common continued fever.
 1. Febricula: *variety* Nakra or Nasha fever.
 2. Simple continued fever.
 - *3. Ardent fever.
 - *c. Thermic fever, siriasis, heat apoplexy.
 - *d. "Low fever."
- II. Specific fevers of known or unknown origin:
 1. Aphthous fever.
 2. "Milk-Sickness."
 - *3. Urban continued fever.
 4. Enteric fever.
 - *5. Non-malarial remittent fever.
 6. Malta fever.
 - *7. Double-continued fever (Manson).
 8. Relapsing fever.
 - *9. Acute febrile icterus.
 10. Yellow fever.
 11. Beri-beri.
 12. Cerebro-spinal fever.
 13. Typhus fever.
- III. Malarial fevers:

1. Intermittent	{	Quotidian. Tertian. Quartan.
2. Remittent or continued malarial fever (Laveran).		
- IV. Fevers of compound origin:
 - *1. Typho-malarial fever.
 - *2. Kala-Azar.
 - *3. Hæmoglobinuric fever (?).

Those clinical types which are marked with an asterisk are classed by Dr. Crombie under the heading of "Unclassified Fevers of the Tropics."

COMBINED TYPHOID AND MALARIAL INFECTION.

For the past fifty years there has been considerable controversy among medical men in India and elsewhere on the question of the

co-existence of typhoid and malarial infection in the same subject and of the clinical picture resulting. So long as the exact causes of both diseases remained unknown, it was natural that little headway should have been made in solving the problem. Now however that their causes and natures are established, we have a right to expect the question of the co-existence of the two diseases to be solved beyond controversy. This however has not been entirely done, hence we welcome a valuable contribution to the question in an article by Dr. I. P. Lyon, of Baltimore, in the January issue of the *American Journal of the Medical Sciences*.

Dr. Lyon has collected from the somewhat extensive literature of this subject a list of 29 cases which meet the following criteria, (1) that typhoid and malarial fever co-existed in the same individual and (2) that this co-existence has been shown by the discovery of the malarial parasite in the blood and by strong evidence, clinical, pathological and bacteriological, of true typhoid fever.

He gives one case of his own, from the Johns Hopkins Hospital; in this instance the patient had distinct chills and irregular attacks of malarial fever, followed by a typical attack of typhoid of at least average severity and in the convalescence therefrom he suffered from malarial paroxysms which yielded to quinine, during which attacks full grown pigmented tertian malarial organisms were found in the blood. Dr. Lyon then quotes two cases, one recorded by Osler and the other by DaCosta, both observers of the first rank. He next analyses five cases of the mixed infection (published by Kinyoun) at the New York Marine Hospital which occurred in sailors recently arrived from southern ports. In all these cases the malarial organisms were found in the blood and the bacillus of Eberth in the spleen or in the intestinal canal. Next come under review 17 cases recorded by Vincent, a French Army Surgeon, from the bacteriological laboratory of the Hospital du Dey, Algeria. Sixteen of these were soldiers recently arrived from malarious Madagascar, and one from a local regiment. In most of these cases the typhoid symptoms dominated the clinical picture. The first manifestations of the infection consisted in an initial rise of temperature, almost always rapid, sometimes abrupt, resembling malaria, with or without a chill (rigor), severe headache, general body pains and some-

times epistaxis. Once established the fever persisted, often irregular and capricious in its course. Rose spots were noted in 12 out of the 17 cases. Death occurred in eight. In all the malarial organisms were found, and in the 8 fatal cases tumefaction and ulceration of Peyer's patches. Cultures from the spleen showed the *bacillus typhosus* of Eberth.

Dr. Lyon next proceeds to review the literature of so called typho-malaria in cases where the above two criteria were not fulfilled. Many writers have noted the existence of mixed forms of intermittent and typhoid fever, but it was the work of Woodward of the United States Army which led to the introduction of the term "typho-malaria." The expression "caught on" to such an extent that in the American Civil War no less than 57,400 cases with 5,360 deaths were returned under this heading! Afterwards Woodward himself recognised the danger of this term and pathetically remarked that it appeared to be "extensively used to denote any obscure febrile disease which offered diagnostic difficulty."

When we come to study the cases reported in America under this title we note that they differ in many important particulars from the cases recorded by the French writers, Laveran and Vincent. The American cases are, says Dr. Lyon, to be divided into two classes, the pure typhoid and the pure malaria. In many we find repeated-paroxysms of chills, high fever and sweating. The onset is often abrupt, and the termination often by crisis. Bilious symptoms are frequent, rose spots seldom develop. The course of the fever is markedly milder than ordinary typhoid. The French cases were of more than average severity with a mortality of 33 per cent. or double the average case deathrate. Complications were severe, and rose spots are specifically mentioned in 20 out of 29 cases. In some of the French cases the febrile paroxysms (malarial) were met during the height of the disease and irregularly, in others only during convalescence from the typhoid, in a few the organisms were found at the beginning, disappeared during the height of the fever, and again appeared at the end, illustrating, as Dr. Lyon says, the truth of the Hippocratic maxim (variously phrased) "*duobus morbis corpus unum obsidentibus vehementior alterum obscurat*" or as Laveran puts it "typhoid is the more masterful disease," but it must not be for-

gotten that quinine was freely used in these cases and in all probability the clinical picture was thereby somewhat changed. Dr. Lyon is inclined to pay more attention to the cases reported by the French authors than to the more numerous ones of his own countrymen in the Southern States. He inclines to the view that in America too often under the name "typho-malaria" two different diseases either simple typhoid or chronic malaria have been included. This opinion is borne out by the more recent observations of Dock of Galveston, Texas, who in 1894 stated that he had never encountered a case of combined typhoid and malaria. He had conducted eight autopsies on cases diagnosed by experienced men as "typhomalaria," and in all cases found simple typhoid. In the Johns Hopkins Hospital, where so much precise work has been done, the combined disease is practically unknown, only the two cases referred to above having been met with. Italian experience is very decidedly to the same effect.

Professor Rho,* a well-known authority on tropical diseases, states that he has never heard of a case of typhomalaria in Italy. In Rho's words "the matter reduces itself to a rare coincidence, to a simple complication which does not merit a special name." With this dictum Dr. Lyon does not entirely agree. In southern and tropical countries, where malarial fevers are endemic and typhoid prevalent, it seems probable that cases of the combined infection are fairly common. This view is supported by Vincent's 17 cases and by those of Laveran and Kinyoun. The mere mathematical theory of chance favours this view. The recent experience of the American troops in Cuba has shown that a combined infection of malaria and typhoid is no chimæra, but this does not mean that there is a special fever "typhomalaria" as an entity of itself; it merely means that typhoid fever by no means spares the subjects of malarial infection any more than it spares syphilitic or tubercular subjects. The wonder is rather that comparatively so few cases have occurred where the patient has become the subject of infection by the plasmodium of malaria and at the same time by the bacillus of Eberth. This simple explanation appears to be the whole of the mystery.

* P. M. O., Italian Navy.

LONDON LETTER.

CRUSADE AGAINST CONSUMPTION.

THE movement for the suppression of tuberculosis, to which reference was made in a previous letter, has derived great encouragement and strength from an influential meeting which was held last month, at Marlborough House, under the auspices of the National Association for the prevention of consumption. The Prince of Wales presided and speeches were made by representative medical men from London, Edinburgh and Dublin. The objects of the Association were explained fully in a luminous address read by Sir William Broadbent, Bart., who set forth the grounds and methods of action in detail. The purpose of the movement is educative rather than compulsory. It seeks to appeal to the intelligence and sense of the people by making them familiar with what we know of the nature of tuberculosis, the manner in which the disease in its various forms is contracted, the social and domestic precautions by which its spread may be restrained, and the circumstances under which those who have been unfortunate enough to contract the disease may hope to be restored to health. Legal pressure by means of notification, segregation, disinfection and the slaughter of tuberculous cattle was considered inexpedient or premature; but stress was laid on the urgent need of promoting the sanitation of dwellings and in the direction specially of cleanliness and ventilation, of discouraging overcrowding, of destroying infective sputa and destroying or disinfecting articles of clothing and furniture soiled by infective material, of preventing the sale and consumption of diseased meat and milk, and of placing the tuberculous sick under conditions where they should be surrounded by and bathed in pure air and bright sunshine. As a practical outcome of these principles, arrangements have been made in several centres of population for establishing sanatoria, and some cattle owners have eliminated from their herds tuberculous cattle, an example which it is to be hoped will be largely followed. Very opportunely a paper on "the prospect of abolishing tuberculosis" was read by Dr. Arthur Ransome, F.R.S., at a meeting of the Epidemiological Society held on the 16th December. He showed by statistics that a very substantial reduction in the prevalence and mortality of tuberculosis had taken place in the United Kingdom during the present

century, a result which he attributed to improved sanitation and discussed in a very instructive way the measures which offered hopes of still further reduction. The decrease of phthisis which has taken place coincidently in the British Army is a signal illustration of the benefit that may arise from improved and increased accommodation, the avoidance of crowding and damp and the practice of cleanliness all round.

BURROUGHS, WELLCOME & CO.'S DIARY.

The "Medical diary and visiting list" distributed to the medical profession by those enterprising pharmacists, Messrs. Burroughs, Wellcome & Co., is prefaced by 146 pages of "therapeutic notes" which present a most interesting view of the pharmacy of the day. The tabloids and soloids of this firm have established themselves firmly in practice. They minister to purity, convenience and accurate dosage; their variety is infinite and they include tinctures and pills as well as powders, vaporoles for inhalation, and enules for rectal administration are among the newer preparations. These notes present descriptions of many new medicines; but the most remarkable of these are the animal substances, of which a list of twenty-two is given, and the serums which are used for diagnostic and therapeutical purposes, regarding which a great deal of sound and useful information is given. Nine preparations are kept in stock. These are of a curative kind. Prophylactic and diagnostic sera will no doubt find their place in the list when their value has been established; indeed, as regards diphtheria and typhoid fever, the firm is already prepared to render assistance.

ANTITOXIN IN TETANUS.

In connection with this subject a very important paper has been published in the *British Medical Journal* by Major Semple, R.A.M.C., describing a successful case of intracerebral injection of antitoxin in tetanus. This is the first case of the kind that has, as far as I know, occurred in English practice, though some twenty have been treated in the same manner in France and with good results. Dr. Semple enters fully into the rationale of the proceeding and gives reasons why the direct introduction of the antidote into the substance of the brain succeeds when subcutaneous and intravenous injections fail. Curiously there is in the same number of the *Journal* (Jan. 7th) an account of a case treated by subcutaneous injection in the Middlesex Hospital, in which the procedure adopted failed.

to relieve symptoms or avert death. The case appears to have been of a very violent description, and the treatment was not commenced until the symptoms of the disease were very pronounced and the toxin had presumably reached the cerebral cells.

TETANUS IN CALCUTTA.

Tetanus is a very common disease of children, adults and horses in Calcutta, and I can imagine no better field for testing the value of this method of treatment; but it would be necessary to use an antitoxin of assured value and instruments of a suitable kind, and conduct the proceedings under strict aseptic conditions. It would also be necessary to commence the treatment at a very early stage of the disease. It is here that the principal difficulty would arise. Cases originating in hospital are not so common now as they used to be in pre-antiseptic days, and cases originating outside of hospitals are, as a rule, not brought for treatment until the symptoms have become very urgent. Still in view of the great mortality of the disease, it would be well to conduct careful experiments in this direction under proper arrangements and precaution.

X-RAYS IN MILITARY SURGERY.

The use of the Röntgen rays in military surgery was the subject of an interesting discussion at a meeting of the Röntgen Society on the 10th of this month. Major Battersby, R.A.M.C., detailed his experiences of the process after the battle of Omdurman. The heat of the Soudan is not favourable for the use of the delicate instruments required for the detection and location of bullets by this means, and the generation of electricity was sometimes found to be difficult. Still the process was found to be of decided practical utility. "In 21 cases of British wounded after the battle of Omdurman," it is stated "where the position of the bullet could not be located, 20 were found by means of the rays and the only exception was that of a lung wound when the patient was too ill to be examined. The Surgeons in charge of the field hospital bore high testimony to the value of the apparatus, and they found in it a probe which was painless, certain and antiseptic." A curious fact was mentioned by Major Battersby, namely, that often the wrong side of a limb was operated on, owing to its being forgotten that the skiagraphs reversed the picture of the parts.—*Verb. sap.*

11th January 1899.

K. McL.

Current Topics.

PROGRESS OF THE PLAGUE.

THE onset of the hot weather has unfortunately not yet been attended by any considerable abatement of the epidemic as in the previous years. For the week ending the 11th of March 1899, the official summary shows that there was a continued increase of plague in Bombay City, the rise in reported plague-deaths being from 978 to 1,109 and in the total mortality from 2,309 to 2,444. There was a rise in the number of cases in Thana District, but no other important change occurred in the Bombay Presidency. Fifty-eight plague-deaths are reported from Karachi. There was a slight general improvement in the Madras Presidency. In Calcutta, there were 78 reported plague seizures with 66 deaths. Some isolated cases have been reported from Howrah and one from Serampore. Slight outbreaks have been reported from one village in each of the Dacca and Faridpur Districts. A considerable improvement has taken place in Mysore State, except that the number of seizures in Kolar gold-fields rose from 32 to 65. The figures show a great improvement in the Lingsugur District of the Hyderabad State. Plague had gained ground somewhat in the Jullunder District in the Punjab, there being 21 seizures during that week.

In Calcutta, the number of reported deaths from the pest has for some time averaged over twenty daily, inclusive of 'suspected' cases.

To check the spread of the disease from Calcutta to the interior of the province, more stringent inspection rules have been issued, with the following explanatory official note:—

"The reappearance of plague in Calcutta, and the occurrence of local outbreaks—all happily of small dimensions though of virulent character—in Backergunge, Faridpur, Dacca, Saran and Darbhanga, in all of which it has been proved that the infection was carried by fugitives from Calcutta, have led the Lieutenant-Governor to the conclusion that steps must be taken to afford some protection to districts in the interior against the importation of infection from the town. Since December 1897, the only observation and detention camps have been those at Chausa, Mairwa, Chakradharpur and Khurda Road. These are all situated at or near the frontiers of the Province. Their object was to protect Bengal against the importation of the disease from other provinces to the west and south. From their situation they cannot and were not designed to act as a protection to Bengal districts against infection from Calcutta, and though for some time past up-trains have been subject to inspection as well as down-trains, this measure was designed merely to prevent the carrying of infection outside Bengal. Now, however, Calcutta has itself become a centre of infection, and is by reason of its more constant intercourse with the mufassal, a more serious source of immediate danger than any infected area more remote. Steps must therefore be taken to guard the interior of the Province not only against infection from other provinces, but also from Calcutta. The measures which the Lieutenant-Governor thinks it necessary to adopt are set forth in Plague Regulation No. 15 of this date (29th March),

which is published herewith. Nothing in the nature of land quarantine is proposed, or would be permissible. Nothing can or should, in the Lieutenant-Governor's opinion, be done to prevent persons not actually suffering from or infected with plague from leaving the town as freely as they please. Nothing is practicable which would seek to interfere with the enormous suburban traffic between Calcutta and its neighbourhood, or with the traffic that passes in and out of the town by road or country boat. There seem, however, to be two measures which can properly be adopted, and which will afford to mufassal districts the protection they need, without hampering the legitimate movements of the people of Calcutta. The first of these is to ensure that no person who is actually suffering from or infected with plague shall be allowed when leaving Calcutta to travel by public modes of conveyance, such as rail or steamer. This is already prohibited by the ordinary law of the country; but the cases which have been mentioned above have shown that the prohibition needs to be enforced. The other is to arrange that when any person not suffering from plague leaves an infected area and proceeds to his home in the mufassal, timely intimation shall be furnished of his arrival to the local authorities in the district of destination. All such persons will be allowed to move about freely and without hindrance, but it is reasonable that the local authorities should have prompt notice of their arrival, in order that they may be forewarned and on their guard."

The Royal Plague Commissioners left Bombay for London on the 25th March. Their report is expected to be issued in July.

HAFFKINE'S ANTI-PLAGUE FLUID.

As several instances of alleged blood poisoning have been attributed to the use of this remedy, which generally has proved to be more or less innocuous, Captain C. A. Johnston, M.B., D.P.H., I.M.S., of Hyderabad, was requested to undertake a bacteriological examination of this fluid to determine its living micro-organisms of an objectionable character.

His general results are thus summarized in an official paper issued by Lieut.-Colonel E. Lawrie, I.M.S.:—

"The samples of Haffkine's fluid examined bacteriologically all show contamination with living micro-organisms—in some cases, Nos. 5315, 5349 and 4096, the contamination seems to be with cocci alone, in the others with a mixture of cocci and bacilli. Although the samples taken show the above contamination, other bottles of the same brew show contamination with other forms of micro-organisms. As far as the investigations have gone it will be seen that the micro-organisms isolated from the fluids are many of them distinctly pathogenic, some more virulently so than others; in one case (No. 5338) the microbe was so pathogenic as to cause death (*vide* rabbit 120). Rabbit No. 121 shows the effect of the contamination with cocci, which was the *staphylococcus aureus*, producing local disease (abscess and ulceration) and a pyæmia. If the temperature charts of the inoculations with one of the brews and the organisms isolated from that brew be compared, it will be seen that the inoculation with the fluid as received from Bombay, gives a greater rise of temperature in most cases than the pyrexia produced by the isolated organisms—therefore, if the living organisms were extracted from the fluid before inoculation, a lower temperature ought to be the result of inoculating such a fluid. This idea seems to be confirmed when the temperature charts of rabbits 101 and 105 are compared. No. 101 is the result of inoculation of Haffkine's fluid No. 4168, giving a rise of temperature to 106°, followed

by death; whereas No. 105 shows the result of inoculation of the same of Haffkine's fluid reesterilized giving a resulting temperature of 104.5 as the maximum, and instead of death, recovery. This is one example of the effect of reesterilizing Haffkine's fluid, but others are now being carried out. It would appear, therefore, that reesterilizing does away with a severe form of septic fever and complications which arise from the contaminating organisms; but the question whether this reesterilizing destroys the efficacy of the original Haffkine's fluid remains to be considered; this is also being done—*vide* temperature chart of rabbit No. 105 (Haffkinized with brew No. 4168). One C. C. of plague culture was inoculated on the 1st January, giving a slight fever only, whereas the control rabbit No. 115 inoculated on the same day with the same dose of the same culture, gave a rise of temperature to 107 and death. The reesterilized Haffkine's fluid was tested as regards the presence of any living organisms at the same time as inoculation was done, but no living organisms were found to grow on the agar tube. Temperature charts of rabbits No. 122, 123, 124 and 128 and 130 can be compared also, with regard to the question of reesterilizing, but it ought to be borne in mind that this brew of Haffkine's fluid showed only slight contamination of cocci.

The following deductions may be drawn from the experiments that have been done so far:—

1stly, that in bottling the Haffkine's fluid from the retorts sufficient care does not seem to have been exercised in preventing contamination.

2ndly, allowing that some contamination is unavoidable, due to the enormous out-turn of fluid necessary to meet the demand, all the bottles on being filled and before being sent away should be reesterilized to 60°C. for an hour, and the corks should be replaced by proper fitting glass stoppers. This probably would not destroy the chemical products of putrefaction. If this were done, and if it was proved that reesterilizing does not injure the protective influence of the inoculation fluid, then I feel sure there would be less number of cases of septic poisoning among the inoculated subjects, for the fluid which is received now from Bombay is undoubtedly a "putrescent organic liquid" as stated before the Commission by the Plague Commissioner, Hyderabad."

It seems desirable therefore that every care should be taken to sterilize this fluid before issue if the remedy is to maintain its popularity.

RATS AND THE PLAGUE.

NEARLY a century ago, the remarkable relation of rats to plague was noticed in China. Mr. Kumagusu Minakata writes in *Nature*, February 16th, to the following effect:—In the *Encyclopædia Britannica*, ninth edition, vol. xix, p. 168, Dr. J. F. Payne writes: It is remarkable that of late years reports have come of the occurrence of oriental plague in China. It has been observed in the province of Yunnan since 1871.....It appears to be endemic, though there are rumours of its having been brought from Burma and become more noticeable after the suppression of rebellion in that province (1872). However, the following passage I have lately found in Hung Liang Kih's *Pek-Kiang-Shi-Hwa* (British Museum copy, 15,316, a, tome iv, fol. 4, b) bears witness to the much

earlier occurrence of the pest in Yunnan, inasmuch as the author, who was born in 1736, and died in 1809, speaks of his contemporary dead thereby: "Shi Rau-Nan, the son of Shi Fan, now the Governor of Wang-Kiang, was notorious for his (poetic) gift, and was only 36 years old when he died.....Then, in Cháu-Chau (in Yunnan) it happened that in day time strange rats appeared in the houses, and lying down on the ground, perished with blood spitting. There was not a man who escaped the instantaneous death after being infected with the miasma. Tau-Nan composed thereon a poem entitled Death of Rats, the masterpiece of his; and a few days after he himself died from this 'queer rat epidemic.'"

NOTIONS ON THE NATURE OF THE PLAGUE.

A MEDICAL practitioner sends us from Bombay a printed statement of his views on the causation of the plague, which he had prepared for the use of the Plague Commissioners. The valuable character of his *views* may be gathered from the following extract from his article:—

"I do not think it (the plague) was imported in Bombay from Hongkong or anywhere else. I attribute 3 sources of causes of outbreaks of plague in Bombay:—
(a) The predisposing cause was the Bombay Municipality.
(b) The exciting cause was the Nature herself. (c) The aggravating cause was the Plague Committee."

HOW AGITATORS WORK.

SEVERAL correspondents have sent us a post-card bearing the following manifesto which has been widely circulated to Civil Surgeons in India:—

PLAGUE.

DEAR SIR,

For the sake of the Public (sic.!) I have the pleasure of asking you that—Are you against inoculation? If so, state reason. And if in favour, state reason. State in either cases if you would like to keep your name in secret. IT WILL NOT BE OUT OF WAY TO STATE THAT GOOD MANY OF THE CIVIL SURGEONS ARE AGAINST INOCULATION and they have already written me about it. If you do not care to reply, please refuse this card.

I beg to remain,

Sir,

Your most obedient Servant,.

* * * * *

N. Physician.

28th Jan. 1899.

BACTERIA IN RUM.

It might be thought impossible on the face of it that there could be any bacteriology of rum seeing that it contains nearly 75 per cent. of alcohol, but according to the results of a very interesting investigation recently made by Mr. V. H. Veley, M.A., F.R.S., of Oxford University, and his wife, and summarized in *The Lancet*, there does exist an organism in rum which accounts for an apparent disease to which it is liable at times and which is known in the trade as "faultiness." The cause of this disease has long been unexplained, for it has never occurred to

those concerned that it could be due to a microbe, especially as the strength of the spirit is only 25 per cent. short of pure alcohol. The "faultiness" of rum is at once obvious when the spirit is diluted with an equal bulk of water, the diluted liquid either immediately or after some hours becoming cloudy and depositing on longer standing a more or less copious precipitate or showing the presence in greater or less abundance of floating flocculencies. The micrococcus which has been isolated and identified as the cause of "faultiness" is a very interesting organism. It does not, however, appear to be pathogenic or toxic according to the results of inoculating a guinea-pig. Its survival in spirit—that is, in a liquid which has hitherto been considered to be one of the best materials for preserving anatomical specimens—is remarkable. Strictly speaking, however, the organism does not flourish in alcohol but "in its gelatinous envelope, thus living as it were in a state of siege in its own castle through the walls of which it can obtain its necessary supplies of food in the form of sugar while keeping out its enemy alcohol." No definite information has been obtained as to the original habitat of this peculiar micro-organism. The discoverers of this new micro-organism which has caused a great pecuniary loss to manufacturers propose to call it provisionally *Coleothrix methystes*, from *κολεος* (a sheath) and *μεθυσις* (a drunkard)—a name ingeniously suggested by a Fellow of Corpus Christi College.

KITCHEN BACTERIOLOGY.

DR. JAGER of Königsberg has been delivering a popular course of lectures for ladies on hygiene and bacteriology, in which he has applied laboratory methods to culinary matters and processes. His jars with cotton stoppers like culture-tubes, says the *Dietetic and Hygienic Gazette*, filled with cooked and uncooked meats, etc., kept unspoiled from five to fifteen days in the warm hall.

His class was allowed to invite their friends to an exhibition of Kitchen products—some raw and some cooked—that had remained in a warm room for periods varying from five to sixteen days, and which were all found perfectly fresh and quite unchanged in appearance and taste. Nor had any complicated procedure been required to obtain this result. The method simply consists in: (1) The use of vessels with well-fitting, overlapping lids, instead of the inside lids used in kitchens the world over, which allow stray bits of matter that may adhere to their rim to fall into the food; (2) avoidance of opening the vessels in which the food was kept, or, where this was indispensable, careful manipulation as in bacteriological work; and (3) the use of cotton-wool as a covering. Cotton-wool lids have been specially prepared to

fit the wide tops of the food vessels; they consisted of a circular disc of cotton-wool, tightly held between two metal rings, the outer of which formed the overlapping rim of the lid. It is to be hoped that Dr. Jäger will find imitators, and that "kitchen bacteriology" may become a study with ladies. Certainly there is much room for improvement in the old-fashioned kitchen methods to which our "family plain cooks" clung with such desperate energy, and which they seem to regard with an almost superstitious reverence.

THE COUNTESS OF DUFFERIN'S FUND.

At the Annual Meeting of this "Association for Supplying Female Medical Aid to the Women of India," held on March 3rd, in Calcutta, under the presidency of Lady Curzon, and a large gathering, including Lord Curzon, Surgeon-General Harvey, C.B., and Colonel Hendley, C.I.E., it was stated that there are now thirty-five lady doctors of the first grade, *i.e.*, persons qualified for registration in the United Kingdom, seventy-five Assistant Surgeons or practitioners of the second grade who have been trained in India and hold Indian qualifications, and two hundred and fifty-seven Hospital Assistants, or practitioners of the third grade, which includes all qualifications not considered up to the standard required for Assistant-Surgeons.

There have been as usual several changes among lady doctors holding important charges, as well as a number of new appointments. Miss A. Bäumler, M.D., has vacated her appointment in Calcutta, and Miss A. L. Church, M.B., has succeeded her in charge of the Lady Dufferin Victoria Hospital. Miss Blong, M.D., has been confirmed in charge of the Begum's Hospital at Bhopal, *vice* Miss Barnard, L.R.C.P., resigned, and Miss H. Lauder, M.D., has replaced Miss Dissent, M.D., at Ulwar. Miss Friend Pereira, M.D., has been appointed to Chittagong, and Miss E. Knight, M.B., is temporarily engaged at Lahore. Miss Crawley, L.R.C.P., is officiating at Bettiah, *vice* Miss Marsh, L.R.C.P., who is now on leave in Europe, and Miss J. Perry will shortly hold charge at Nahan in place of Miss Balfour, M.D., who is about to proceed on leave. Miss Rachel Cohen, M.B., who was lately awarded the Elgin Jubilee Scholarship at home, has been appointed to the charge of the new hospital at Rangoon, replacing Miss H. Forbes, who proceeds to Europe to obtain the higher degree in medicine. Miss Yerbury, M.D., in charge of the hospital at Agra, and Miss L. Mackenzie, L.R.C.P., at Gaya, are both likely to be granted furlough towards the end of March, and a temporary vacancy will shortly occur at Patiala, as Miss J. Wynne, L.R.C.P., has been ordered home on medical certificate. Miss D. E. Pratt, M.B., who has recently taken

the higher degrees in Europe, has been selected for the charge of the new hospital at Srinagar in Kashmir, and Miss Cardozo will leave shortly for Fort Sandeman in Baluchistan to open a new dispensary in that station.

With regard to the various hospitals and institutions engaged in furthering the objects of the Association, it will be seen that while a number of the finest hospitals have been built and are entirely supported by Native Princes, the majority have been erected by funds collected by the supporters of the Fund, and that a considerable amount of money has been spent on their construction by district branches of the Association.

Over twenty-four lakhs, in all, it is computed, have been expended on buildings, and have been distributed as follows:—In the North-Western Provinces and Oudh, Rs. 7,10,000; in Bengal, Rs. 4,96,000; in the Native States, Rs. 4,54,000; in Bombay, Rs. 1,65,000; in the Punjab, Rs. 1,60,000; in Madras, Rs. 1,52,000; in Mysore, Rs. 85,000; in the Central Provinces, Rs. 79,000; in Burma, Rs. 72,000; in Berar, Rs. 33,000; and in Baluchistan, Rs. 9,000.

This shows that about seven lakhs have been spent in the last five years, of which nearly a lakh and a half have been expended in building operations during 1898.

In previous volumes the Committee has drawn attention to the well-known difficulty of persuading *purdah* women to make use of the hospitals connected with the Association, and in the last report it expressed the hope that as special *purdah* wards and *purdah* hospitals were more generally constructed throughout the country, an increased attendance would be noticeable, as ignorance and suspicion were slowly overcome.

In connection with this subject, and in order to show as plainly as possible the steady progress which the Committee maintains is steadily being made in the direction, special reports were recently called for from the Lady Doctors of the first grade in charge of Female Hospitals in various parts of India. Their remarks, with the details of relief afforded by them to *purdah-nashin* women, will be found in Appendix XI. The details which have been given have been somewhat hastily collected and are necessarily more or less scanty, but the Committee hopes to give fuller information on this important subject in its next report. At the same time the Committee feels constrained to say that much more assistance might be given to them in this matter, if influential Native gentlemen would use their best endeavours, not only to explain the real objects of the Association where doubts may exist in this respect, but also to obtain suitable candidates to adopt a career in which they may afford relief to their suffering sisters. So far as the statements which have been received are concerned, the Committee trusts that they will, when the great difficulties

attending the treatment of *purdah* women are remembered, be considered to hold out fair promise for better results in the future. In the North-Western Provinces and Oudh report for instance, the Central Committee finds the encouraging remark by the Provincial Committee that several of the local reports lay stress on the fact that the number of strictly *purdah-nashin* patients is steadily increasing, while the private services of lady doctors are in some quarters highly appreciated, and being largely requisitioned. Free relief it will be seen from the returns was afforded to 2,268 women at their homes in the North-Western Provinces and Oudh alone.

Lord Curzon signified his intention of continuing the Viceroy's medals to the Countess of Dufferin's Fund which were first given by Lord Dufferin and have since been presented by Lords Lansdowne and Elgin. These comprise four silver medals for competition at the Calcutta Medical College, the Campbell Medical School, the Lahore Medical College, and the Agra Medical School, a bronze medal being given to the latter school until such time as the students are qualified to compete for a silver medal. Silver medals are also continued to the Medical Practitioners' Class at Madras and the Certificated Practitioners' Class at the Bombay Medical Colleges, and a bronze medal is given to the Medical School at Hyderabad, Deccan. Lord and Lady Curzon will also give an annual subscription of Rs. 500 to the Fund.

THE VICEROY ON WESTERN MEDICAL SCIENCE.

IN the course of his eloquent address, His Excellency made graceful allusion to the great benefits which India is receiving from Western medical science. After saying that the British had come to India as conquerors indeed, but as benefactors also, bringing religion, law, literature and science as gifts in their hands; and after admitting that there might be two views about the three gifts first mentioned, he said: "Now I come to the last boon, of science, and medical science in particular. About this no two opinions can possibly be entertained. There may be prejudices and scruples arising from long custom, ignorance, or other causes, but doubts there cannot possibly be; and I say this, that if we had come back to you from the West with our medicine in our hand, and with that alone, we should have been justified in our return. For what is this medical science we bring to you? It is no mere collection of pragmatical experimental rules. It is built on the bed-rock of pure, irrefutable science; it is a boon which is offered to all, rich and poor, Hindu and Mohamadan, woman and man. It lifts the *purdah* without irreverence. So far as I know, it is the only dissolvent which breaks down the barriers of caste without sacrilege. Medical science, indeed,

is the most cosmopolitan of all sciences, because it embraces in its merciful appeal every suffering human being in the world. Now, our Anglo-Indian poet Kipling—I claim him as an Anglo-Indian, though he is also the property of the world—in his latest poem, and I hope and pray—and I am sure you join in that prayer—that it will be by no means his last, has thus written:

Take up the White Man's burden—
The savage wars of peace,
Fill full the mouth of famine,
And bid the sickness cease.

Well, this part at any rate of the White Man's burden, this portion of the bounty of the Aryans of the West, has not been ignored by the British in India, and in my view every hospital we build in this country, every doctor we train, every nurse we turn out, every patient we cure, is part of the service that we owe to India; is an element of our duty in this country; is part of the home-coming gift which the Aryans of the West have brought back to their kith and kin."

RABIES IN THE PUNJAB.

THERE appears to be no doubt that rabies is largely on the increase in Lahore and the surrounding districts, says the *Civil and Military Gazette*. Veterinary-Captain Jocelyn informs the Inspector-General of the Civil Veterinary Department at Meerut that 42 cases were dealt with at the Veterinary College in Lahore during the year ended on the 31st January last. This total shows a marked increase on those of the three previous years, which were 29, 9 and 13 respectively. Of course the figures do not cover the full extent to which the disease is prevalent for, as the Principal of the College observes, the number of cases brought to that institution represents "but a fractional part of the total number which occur." Captain Jocelyn ascribes this marked spread of rabies chiefly to increased intercourse between various localities, consequent upon brisker trade, and also to the fact that recently "circumstances have been more favourable for the breeding of the canine species (jackals, wolves, hyenas, &c.)." As to the prevention of a further spread of the disease, the Principal recommends that the Police should be empowered to seize all stray and ownerless dogs, especially in cantonments and municipalities, and that the prevalence of the disease and its dangerous nature should be made as widely known as possible.

ADULTERATION OF GHEE.

A DIFFERENCE of opinion between the Government of Bombay and the Supreme Government has caused a very serious delay in the adoption of the legislation which is admittedly required to check the offence of adulterating ghee in the

city of Bombay, says the *Times of India*. Nearly three years ago, at the request of the Bombay Municipality, a draft Bill to extend the clauses of the Municipal Act relating to the adulteration of food and drugs which were powerless to deal with this growing evil was approved by the local Government. In this little Bill a stringent clause was inserted, providing that the plea that the vendor was ignorant of the nature of the article sold could not be accepted as valid in any prosecution, a proviso which, rigorous though it be, is regarded as essential if the measure is to prove at all effective in dealing with a highly objectionable practice. The Governor-General in Council hesitated to give his sanction to this clause, and asked for an assurance that the retail trade in ghee was carried on under such circumstances that the penalties could be enforced without injustice to the vendors. His Excellency's advisers had apparently overlooked the fact that the section was copied exactly from Bengal Act II of 1888. The upshot of nearly two years' correspondence between the two Governments is that Bombay has gained its point, and in the draft of the Bill recently published the clause stands in its original form.

THE SCHOOL OF TROPICAL MEDICINE.

THE School of Tropical Medicine, which is being formed with the assistance of Mr. Chamberlain, is, it is stated, making progress with its preliminary work. A conference of doctors and colonial officials was held at the Colonial Office on March 1st, when the West African malaria and other tropical diseases were discussed, and information as to their remedies and prevention was tabulated. Mr. Chamberlain will make a statement upon the progress of this movement at the dinner which is shortly to be given in connection with the project.

THE lumbar curve of the vertebral column has been studied by Cunningham and by Turner, but very little information concerning this feature among the American races was forthcoming till a recent paper by Dr. G. A. Dorsey in the *Bulletin of the Essex Institute*, Salem, Mass (vol. xxvii, p. 53). The mean index of eight varied American peoples ranges between 100.3 and 101.5; they are thus orthorachic. Dorsey considers the lumbar index as an important means of determining sex in any individual race or tribe, and that it bids fair to become one of the most valuable ethnic tests known in determining the physical superiority or inferiority of any tribe or race.

A STRIKING feature of the last Rajputana Medical Report by Lieutenant-Colonel A. Adams, I.M.S., for the year 1897, is that the surgical section is graphically printed in red.

AN experimental sowing of seed of the Australian salt bush is about to be made in the Punjab under arrangements to be made by the Director of Land Records and Agriculture.

A NEW insect 'plague,' the '*Jigger*,' has been introduced into Bombay from Africa. Twelve persons are already attacked by this pest, a description of which is given on another page.

INFLUENZA has been rather prevalent of late throughout a great part of India.

Reviews.

Practical Ureanalysis and Urinary Diagnosis.—By C. W. PURDY, M.D. Fourth Edition. Revised. Philadelphia: F. & A. DAVIS & Co., and London: SAMPSON, LOW, MARSTON & Co. Crown 8vo, pp. 365. \$2.50. 1898.

EVEN more than formerly, an examination of the urine is nowadays an important part of the routine procedure of both physician and surgeon preliminary to the treatment of most diseases, and rightly demands a special treatise to itself; and no book we have seen is likely to prove more generally useful for this purpose, both to practitioners and students, than Dr. Purdy's manual. This is attested by the demand for a fourth edition within three years of the issue of the first. In this new edition, the latest improved methods of examination have been added and many new illustrations. These latter, indeed, form an attractive feature of the book. They comprise not only woodcuts, but numerous photo-engravings and coloured plates, including Vogel's useful scale of tints. Each morbid constituent is systematically discussed with reference to its detection and clinical significance in a concise yet explicit way; and a chapter has been added on urinary examination with special reference to Life Assurance.

Primer of Psychology & Mental Disease.—By C. B. BURR, M.D. Second Edition, $5\frac{1}{2} \times 7\frac{3}{4}$ inches. \$1. Philadelphia: F. & A. DAVIS & Co., and London: SAMPSON, LOW, MARSTON & Co. 1898.

THIS little manual, which is specially intended for use in training-schools for attendants and nurses, and in medical classes, is well calculated to fulfil its object. It does not attempt too much, and what it does give is of a thoroughly practical character.

Grant Medical College Magazine: Bombay, 1899.

LIKE every self-respecting college, the Bombay Medical College has its students' magazine. The third number of this journal is brightly written, like its predecessors, and reports several interesting cases, including bulbar paralysis,

sequelæ of plague, cerebral tumour, and a spirited criticism of the recent Hyderabad "Report on Plague."

Vaccination: its Natural History and Pathology.—By S. MONKTON COPEMAN. The Milroy Lectures for 1898. London: THE MACMILLAN Co. 1899.

THE recent decree of the Local Government Board of England to use only glycerinated vaccine lymph for all public vaccinations has made a knowledge of all that is claimed for this method of preserving lymph imperative upon all medical men, and no one who has any responsibility for vaccination will do other than welcome the handsome and valuable volume in which Dr. S. Monkton Copeman has embodied his researches into the natural history and pathology of vaccination. This is no controversial book; it is not written to prove the value of vaccination, but to describe what vaccination is and how it should be carried out. We have no intention of criticising these Milroy Lectures; it will be far more useful to our readers to briefly describe the method of preparation of the now officially recognised glycerinated lymph and to state all that is claimed for it. In so doing we have necessarily to pass over many interesting chapters in Dr. Copeman's volume, on the history of Jenner's discovery, on inoculation, on vaccine stocks, and many other points.

We understand that the Animal Vaccine Depôts in Bengal are now supplying lymph stored in glycerine, instead of the lanolin which we have used for several years past. But we do not imagine that anyone will mistake this lymph as now issued for the bacteriologically pure lymph advocated by Dr. Copeman.

Although the practice of Animal Vaccination is now almost universal throughout Continental Europe it has been, up till last year, employed in England to a very limited extent only. The decision in the long incubated Royal Commission Report on Vaccination to give up arm-to-arm vaccination was to a great extent based upon the following grounds (1) because of a prevalent opinion, not universally held, says Dr. Copeman, that the results of arm-to-arm vaccination were not what they used to be, in fact that by repeated human transmission the virus had become weakened. (This view does not appear probable to Dr. Copeman.) (2) Because of the opinion held that certain other human diseases may be propagated together with vaccinia when vaccinations are performed from arm-to-arm. These diseases are, as all know, syphilis, tuberculosis and erysipelas. The Royal Commission gave its opinion that "such risks are undoubtedly real," but "when considered in relation to the extent of vaccination work done they are insignificant." These

risks it is claimed are practically obviated by the use of glycerinated lymph *properly prepared*.

In 1891 Dr. Copeman called attention to special method of preparing bacteriologically pure lymph. This consists in the intimate admixture of a given amount of lymph or rather vesicle-pulp with a sterilised fifty per cent. solution of chemically pure glycerine in distilled water, and the subsequent storage of the emulsion in sealed capillary tubes for several weeks.

The use of glycerine is no new device. What is new in Dr. Copeman's method is the appreciation of the fact that lymph so stored can be made bacteriologically pure and absolutely free from all extraneous organisms. That this is so Dr. Copeman has shown by repeated cultivations on plates of agar (photographs of which are given in this book). This claim has been now substantiated by the work of numerous observers in many parts of the world.

"By consent, therefore, (writes Dr. Copeman, p. 162) of numerous observers fully qualified to judge of the matter, we have in glycerinated calf lymph, properly prepared, a vaccine material which, while *even more efficient as vaccine than the original lymph*, can be produced practically free from the extraneous organisms which, at one time or another, have been isolated from fresh or stored lymph by the method of plate cultivation and . . . this lymph can be, by this method of preparation with glycerine, rendered *free also from pathogenic bacteria*, such as those of tubercle or erysipelas, even when these have previously been added in considerable quantity for experimental purposes."

The Royal Commission's Report accepts the correctness of these claims (Section 448).

Dr. Copeman also discusses the use of other methods of storing lymph, especially the lanolin method introduced by Lt.-Colonel King, the Sanitary Commissioner of Madras, and the vaseline method of Major Bamber, I.M.S., in the Punjab. He also gives in an earlier chapter a full and appreciative account of Dr. King's variolation experiments which, as Dr. Copeman says, "for reasons unknown" were regarded with disfavour by the Madras Government. Dr. W. J. Simpson's work in Calcutta in raising a stock of vaccine lymph of variolous origin is also detailed.

To return however: it was never claimed that either vaseline or lanolin had any bactericidal action, and in fact Dr. Blaxall has shown them to have none. In this respect, therefore, these and other substances used differ from glycerine, which has a decided germicidal power. Dr. Copeman thus sets out the advantages of glycerinated calf lymph; (1) By the glycerination of the lymph-pulp great increase in quantity is obtained without any loss in quality; (2) it does not dry up too quickly; (3) it does not coagulate in the tube, (4) it can be produced absolutely free from

various streptococci and staphylococci which are usually found in untreated calf lymph and which, under certain circumstances, are liable to occasion suppuration; (5) also the streptococcus of erysipelas even if originally present is rapidly killed out by the germicidal action of the glycerine; (6) the tubercle bacillus is effectually destroyed; (7) the possibility of inoculation of syphilis is eliminated as the calf is not subject to the disease; (8) the necessity of collecting children together, with the risk of spreading infectious diseases or of transporting a calf from place to place is obviated: there is also less danger of "late" erysipelas in the child, as there is no necessity for opening the mature vesicles; (9) the bacteriological purity and clinical activity (on the calf) of the lymph can be tested prior to distribution; (10) large stocks can be kept in hand for any sudden demand; (11) the expense of glycerinated lymph is proportionately small since the amount obtained from each calf is enormously increased. *Enough for five thousand vaccinations can be obtained from one calf.*

The method of inoculation of the calf presents nothing new—long four inch incisions, if possible without drawing blood, are made. On the 5th day (120 hours) the vesicles are scraped with a sterilised Volkmann's spoon and the contents transferred to a sterilised bottle. The abraded surface of the calf is dusted over with oatmeal or starch and boracic powder. The animal is slaughtered and examined by a Veterinary Surgeon. A calf should produce from 18 to 24 grammes of lymph-pulp. This is rubbed up in the triturating machine, and then mixed with six times its weights of a sterilised solution of 50 per cent. chemically pure glycerine (the best is made by Price & Co.). The emulsion is then transferred to small test tubes which are aseptically sealed and stored in a cool place. It is distributed in sealed sterilised capillary tubes. The emulsion is tested immediately and every week for four weeks; if it is found to be bacteriologically pure it is issued for use. It will retain its full activity for at least eight months.

In his report to the Local Government Board, Sir Richard Thorne-Thorne insists strongly on the fact that the preparation of this bacteriologically pure lymph requires considerable care and skill, and that a properly equipped laboratory under the direct supervision of a bacteriological expert is absolutely essential.

Till we have this in India we need not and cannot expect to have bacteriologically pure lymph. The Home Government has accepted this recommendation, and we hope the day is not far distant when each Province in India shall be equally well provided.

Dr. Copeman's book concludes with extracts from a report on the animal vaccine institutions in Paris, Berlin, Brussels, &c. We can heartily commend this volume to all our readers.

Current Literature.

MEDICINE.

French Views on the Sleeping Sickness.—

M. Le Dantec, a medical officer of the French Marine and a Professor at Bordeaux, has published an interesting article on the sleeping sickness (*Arch. Cliniques de Bordeaux*, September 1898). It gives a clear history of the disease up to date not neglecting the work of Stephen Mackenzie and Manson. Much in the article is identical with Manson's recent lecture (*British Medical Journal* and *Journal of Tropical Medicine*, December 1898), so need not here be quoted, but M. Le Dantec offers a new theory (in addition to nine others quoted) to explain the origin of the disease. He tells us that Firket (*Belgian Acad. de Med.*) in June 1895, described filaria as found in the blood of the majority of negroes of the Congo State. This agrees with Manson's estimate of 50 per cent. The embryos strongly resembled Manson's *filaria pestans*, but Firket noticed differences and thinks they were of more than one species or variety, or of different stages of evolution. A month later (July 1895), Tessier at the Paris Academy of Science reported an interesting observation in a patient from Guiana in whose stools (he was suffering from "tropical" diarrhoea or sprue) he found the *anguillula stercoralis*. (This is the worm to which in Cochinchina sprue has been attributed.) The blood of Tessier's patient contained many embryos resembling Manson's *filaria nocturna*. This is not all; in studying the female *anguillula* Tessier was able to extrude embryos from the vaginal orifice which he says were absolutely identical with the embryos found in the blood. He suggests that the embryos find their way into the circulation through the mucous membrane of the digestive tube. M. Le Dantec then starts the theory that in cases of sleeping sickness either the already known species of *anguillula* or another species resides in the intestine, and puts forth its embryos into the digestive tube, from whence they find their way into the general circulation, but do not produce any symptoms while they are in movement, but give rise to sleeping sickness when they come to be arrested in the vessels of the brain. The pathological anatomy of the disease, he considers, favours this hypothesis. Guerin, who in his 1869 thesis described thirty-two autopsies on this disease, almost always found the sinuses of the dura mater dilated and more or less engorged, and the arachnoid vessels and those on the surface of the encephalon were usually increased in size or varicose. There was no trace of inflammation, recent or chronic, nor softening nor other lesion. Le Dantec then says that while in physiological sleep we have an anæmia of the brain, in opium sleep we find a congestion of the brain, so in sleeping sickness the somnolence is produced by the presence in the vessels of the brain of the embryos of the *anguillula* or such parasite producing congestion. The *anguillula* is now known to be the rhabditiform phase of the *rhabonima intestinale* (vide Manson, p. 551); the male is unknown, but the female is recognised by the five or ellipsoid eggs strung together and visible in the middle of the body. Manson says nothing about the possibility of the embryos escaping into the circulating blood. It seems a weak point in Le Dantec's theory that no one has found these embryos blocking the brain vessels, and, moreover, though the *anguillula* may, with other worms, be often found in the intestines of cases of sleeping sickness, yet its distribution is far more extensive than the very restricted area of sleeping sickness. *Anguillula* is as widely prevalent a worm as is the *ankylostoma*.

Le Dantec also suggests that the skin eruptions of sleeping sickness are identical with *Crawcraw* (vide Manson, p. 521), and that the two maladies are caused by the same parasite, in one case attacking the skin, in another the brain; while in its adult stage it lives in the intes-

tine as the *Anguillula* (*vide* Neil's description of *craw-craw apud* Manson).

There are two other diseases with which sleeping sickness may be compared, writes Le Dantec: (1) noma, a curious malady met with in some epidemics of influenza; at Tubingen in 1718, and at Mantua in 1890. It is characterised by a prolonged sleep, but it lasts only 5 or 6 days; hyperemia of the meninges and oedema were found *post-mortem* in one case. He also refers to the cases of hepatic narcolepsy studied by Levi (*Archives de Med.*, 1896) in the later stages of liver cirrhosis and during attacks of hepatic colic. Another disease called in French "*Nelavan*"* is also characterised by prolonged somnolence, but the other symptoms are different, *viz.*, hallucinations, hyperaesthesia, &c. It is also epidemic and sometimes has attacked whole villages. Recently M. Garde (*Presse Medicale*, 1st October 1898) has an article on the resemblances between some points in sleeping sickness and myxoedema.

Finally M. LeDantec, while recommending purgatives in the treatment of the disease, makes the following bold suggestion, *viz.*, to bleed the patient to about half a pint of blood once a week and to inject an equal quantity of artificial serum. He calculates that each such bleeding will remove 18,000 embryos, and by repeated weekly bleedings the blood will become freed from all the embryos!

Goitre treated by Injections of Iodoform.—M. Rosenberg (*La Presse Med. de Paris*, December 11th, 1897) used the following treatment. The neck is carefully disinfected, and about half a drachm of the following solution is injected deep into the tumour:

Iodoform, 15 grains	... (1 gramme).
Ether, 105 grains	... (7 grammes).
Sterilised olive oil, 105 grains	... (7 grammes).

At first inject every four days afterwards every second or third day. The injections produce a feeling of burning which usually soon disappears. Usually 25 injections are necessary to remove the tumour. M. Rosenberg claims a complete cure in 45 per cent. of cases and decided improvement in half the cases. In a letter to *British Medical Journal* (January 14th, 1899), Dr. Stevenson groups the facts in favour of a bacillary origin of the disease he does not refer to M. Grasset's alleged discovery of a hæmatozoon, *Indian Medical Gazette* 1898, page 430.) Stevenson quotes Lustig's discovery of a *bacillus liquefaciens* in waters of the vale of Aosta, and says (1) filtration and boiling destroys the goitrous principle in water; (2) goitre may become epidemic; (3) goitre occurs where too little care is taken of water; (4) it is frequent on the limestones of the carboniferous series where the water percolates rapidly carrying bacteria in its train; (5) the waters of many rivers are goitre-producing, much of their volume being derived from surface drainage; (6) nitrites and nitrates indicating presence of soil bacteria are found often in such waters. But in Stevenson's opinion the cause is due to the decomposition of metallic sulphides, iron and copper pyrites. The finding of a bacillus or a blood parasite would explain much. Almost all that is certainly known of goitre in India is that it is found common in montane and submontane districts in the delta of the Ganges and Brahmaputra (Assam and Mymensingh, &c.), and in certain malarious spots in Umballa district and near Multan; low lands near great rivers, damp soils, generally also malarious.

Nuclein in Chronic Malaria.—Though Osler's dictum that "any fever which resists the action of quinine is not malarial" is generally true, it only applies to tertian and quartan forms of the parasite, and not to either irregular *resivo-autumnal* cases nor to chronic malarial cachectic states. Among the latest proposed remedies is *nuclein*, discovered by Vaughan in America. This substance is extracted from animal membranes, spleen,

testes, thyroid as well as from yeast, yolk of egg, &c. It contains phosphorus and sulphur. It is stated to be the bactericidal element in blood. When administered by the mouth or rectum, a great increase of the white corpuscles follows rapidly, and the blood serum is very toxic to most microbes. This bacteria-destroying element is said to be produced by the white cells. Yeast-nuclein is a grey white powder, soluble in alkaline solutions, dose is 10 grains, 6 times daily or half a grain hypodermically. Glowing accounts are frequent in American papers as to the improvements effected by nuclein, even cures of tubercle of lungs. Weight is markedly increased. Wilson (*vide Therapeutic Gazette*, Nov. 98) gives instances of perfect and rapid cures in chronic malarial cachexias.

Infantile Diarrhoea.—(*Medicine*, November 1898.) The pathogenic agent is bacterium coli, often associated with streptococcus pyogenes. These organisms ordinarily saprophytic in the intestinal tract assume special virulence. Milk is the chief vehicle of infection in infants.

Treatment—Boiled cooled water as thirst demands, to the exclusion of all food for 12 or even 24 hours (*cf. I. M. G.*, p. 149, 1898). All albuminous and starchy food to be withheld. Give toast water, made by putting in a bowl, 2 large pieces of stale white bread toasted brown, pour on boiling water till covered, add a pinch of salt, stand till cool, pour off clear water which use or barley water, made by boiling a handful of barley in a pint of water for an hour or more with a pinch of salt, use the supernatant fluid cooled. One to three tablespoonfuls of toast or barley water every hour or two hours for 48 hours. Alcohol if necessary. No milk for at least 3 days. White of an egg beaten up with crushed ice and little salt is most acceptable to stomach and is sufficient nourishment. Intestinal irrigation most valuable. (1 drachm of common salt to 1 pint of water warmed.) The irrigation to be continued till the water returns clear and free from fecal matter. Lactic acid (dose one grain and a quarter) is strongly recommended by Boules. Crandall says, opium is indicated (1) when stools are frequent with pain; (2) when they are large and watery; (3) if dysenteric, use opium with castor oil; (4) in late stages, with scanty frequent stools; (5) if undigested matter is passed.

Epidemic of Dysentery in Danzig.—Dysentery is endemic in Danzig and elsewhere in Prussia. It was epidemic in 1895,—over 1,000 cases with 12 to 15 per cent. 'case' death-rate. Borntrager gives an account of it, quoted in *Journal of State Medicine* (December 1898). He was unable to trace any special reason why dysentery should be endemic. He thinks the Danzig epidemic to be due to direct personal communication through infected linen, bed-clothes, etc. There was nothing to suggest the drinking water to be at fault, nor the food. Infection is said to have occurred very rapidly. Many cases lived together in one room. Infective excreta probably caused the diffusion. The disease followed recovered patients into other villages. In all there was overcrowding in houses and want of cleanliness.

Borntrager's article though 100 pages in length does not seem to have proved much definitely. The persistence of the disease in a climate like that of Prussia is an interesting fact. The article, at any rate, reminds us of the necessity of disinfecting sheets, blankets, &c., used by dysentery patients before reissue to other patients.

W. J. BUCHANAN, B.A., M.B.

SURGERY.

The Sterilising of Catgut.—In a discussion on the best way of sterilising catgut, at the last meeting of the American Medical Association, Dr. N. Senn of Chicago said:—

Since we have prepared our catgut according to the formula of Hofmeister, somewhat modified, we have

* In Quain's Dictionary, vol. 2, p. 192, *Nelavano* is given as a French synonym for "sleeping sickness." This is evidently wrong.

done away with the evil results and have noticed no stitch abscesses. We regard catgut as absolutely reliable and aseptic, as has been proven by extensive practice in a number of hospitals throughout the United States.

Hofmeister, who has done such excellent service in perfecting the formalin preparation of catgut, gives the following most recent method: 1, the catgut is wound on a glass plate with slightly projecting edges, so that the gut is free from the sides of the plate and exposed to the circulation of the boiling and flowing water; the ends of the gut are fastened through holes in the plate; 2, immersion twelve to forty-eight hours in aqueous solution of formalin 2 to 4 per cent.; 3, immersion in flowing water at least twelve hours to free the gut from the formalin; 4, boiling in water from ten to thirty minutes; ten to twelve minutes is amply sufficient, as all microbes and spores are killed by exposure to boiling heat for that length of time; 5, hardening and preservation in absolute alcohol containing 5 per cent. of glycerine and one-tenth per cent. corrosive sublimate.

The first attempts to sterilize catgut by this method under my own direction were made at the St Joseph's Hospital by the Sister in charge of the operating room. The result of experience has led us to modify the procedure in several ways. Instead of glass plates, ordinary abdominal glass drainage tubes have been employed, upon which the gut is wound quite tightly. These glass drains have been found an excellent substitute for the plates. An ordinary large test tube will answer the same purpose. The remaining directions given by Hofmeister were followed to the letter. Numerous inoculations with fragments of catgut prepared by this method in sterile gelatine invariably gave negative results. The catgut is as strong as the raw material, hard, and the knot is less liable to slip than when the ordinary material is used. We have also ascertained that the formalin catgut can be reboiled almost any number of times without impairing its strength.

Catgut to be safe should not only be absolutely sterile, but should contain a sufficient quantity of efficient antiseptic to render it unfit as a culture medium for pathogenic microbes. Hofmeister renders it antiseptic by immersing it in an alcoholic solution of corrosive sublimate. Others have substituted carbolic acid for sublimate. Both of these antiseptics unduly irritate the tissues and increase the primary wound secretion effects which cannot fail in interfering, to a certain extent, with an ideal healing of a wound by primary intention. The valuable and interesting experiments made recently by Lauenstein leave no doubt that it is almost next to impossible to render the field of operation absolutely aseptic by any of our present methods of disinfection. We are forced to admit that nearly every wound inflicted by the surgeon's knife contains some pathogenic microbes, notwithstanding that the strictest aseptic precautions may have been carried out. The experiments made by Ewald have also furnished positive proofs that sterile catgut contains a sufficient quantity of an unknown toxic substance which, by its destructive action upon the cells engaged in the reparative process, transforms them into pus corpuscles, resulting in the production of a limited aseptic suppuration and the formation of sterile pus. Undoubtedly many of the stitch abscesses which occur in the practice of painstaking aseptic surgeons have such an origin. These experimental researches force upon us the conclusion that catgut should not only be sterilized, but that it must be made sufficiently antiseptic to at least inhibit the growth, if not destroy the pyogenic microbes which enter the wound during the operation, or which may reach it later through the circulation. In this part of the preparation of catgut I have modified Hofmeister's method by substituting, for the corrosive sublimate, iodoform. After boiling the formalized catgut for twelve to fifteen minutes, it is cut into pieces of desirable length, tied into small bundles, containing from six to twelve threads, when it

simmers and kept ready for use in the following mixture: Absolute alcohol, 950, glycerin 50, iodoform (finely pulverized) 100 parts. The alcohol dissolves part of the iodoform. The bottle containing the catgut should be closed with a well fitting glass form, and should be shaken well every few days to bring the dissolved iodoform in contact with the threads. The catgut can be kept in this mixture any length of time without losing its strength. One of the valuable properties of iodoform applied to a recent wound is to diminish the amount of primary wound secretion. It does not destroy pus microbes but inhibits their growth. I have used catgut prepared by these modifications of Hofmeister's method with the most satisfactory results, and shall continue to use it until some better method is devised. (For a more detailed account of the method of catgut sterilization, see *Journal American Medical Association*, December 12, 1896, p. 1219.)

Dr. Lemen—Have you had any difficulty with the iodoform decomposing and in having free iodine?

Dr. Senn—No. Until recently we used a 10 per cent. emulsion. Now we have made it a little weaker because the Sister claimed that it impaired somewhat the strength of the catgut. But we have used catgut for six months immersed in a 10 per cent. emulsion without losing any of its material strength. I have my reasons for modifying Hofmeister's formula, because I do not believe that the use of aseptic catgut will furnish us the ideal material. I desire to have absorbable material, that is, not only aseptic but antiseptic for the purpose of eliminating both the microbes and the toxins of the microbes, and I believe it is this addition to the preparation that renders the catgut far more reliable. It is the iodoform that keeps the wound dry, that furnishes one of the conditions favourable to ideal wound-healing—a dry wound, at the same time, it is an active agent in counterbalancing the ill local effects of preformed toxins.

Dr. Boeckmann—I did not say that catgut could not be sterilized in any other way than by dry heat. I did say, however, that we know almost to a mathematical certainty the effect of dry heat, and that if catgut is properly sterilized according to the rules laid down by bacteriologists, it is thoroughly sterilized. I have seen in reports from Germany and other countries that they have found bacteria in every kind of catgut that has been prepared in a chemical way, as well as by dry heat.

I am convinced that Dr. Senn prepares his catgut in the right way; that it is sterilized, not by boiling, but in formalin, which is one of the strongest germicidal agents we have.

A Rapid Method of Sterilizing Instruments.

—Dr. A. E. Wright (*Gaillard's Medical Journal*, May), Professor of Pathology in the British Army Medical School, Netley, recommends for sterilization olive oil heated to from 320° to 356°F. in place of boiling water. This method is more rapid, and does not damage instruments or syringes. All that is requisite is to dip the instrument into the oil or to draw the oil up twice into a syringe. That the proper temperature of the oil is attained may be ascertained, in the absence of a thermometer, by dipping a piece of bread crumb into it, when it will be found to become brown and crisp. The olive oil may be heated in a spoon over an alcohol lamp. If needles or syringes are sterilized in this manner before being put away, it protects them from rust. This method of sterilization has been subjected to the severest laboratory tests, and absolute sterility has always been found.

To Cleanse Hypodermic Needles.—Dr. R. E. L. Barnum (*Atlantic Medical and Surgical Journal; Medical Review of Reviews*) says that obstructed needles can almost invariably be cleansed by filling the syringe with water, screwing on the needle, and holding the needle at the point of obstruction for a moment in the flame of an alcohol or other lamp, when the steam will expel the offending substance, and expulsion of

the water cool the needle. This proceeding is said not to damage the needle. Besides, an obstructed needle is useless anyway.

Immediate Laparotomy in Wounds of the Abdomen.—A paper on this subject by Surgeon Caillet of the French army was read by M. Chauvel at a recent meeting of the Académie de Médecine, the author having based his remarks mainly on two cases that were related in detail. In the first a non-commissioned officer received a revolver shot point blank in the lower part of his abdomen, and an hour later was taken to the hospital. The officer on duty dressed the wound with iodoform and applied a bladder containing ice. The following morning when Dr. Caillet saw the patient, six hours after the injury was inflicted, he was in a good condition; the temperature was 96.8 degrees F. and the pulse 80; there was no vomiting, hiccup or dyspnea. By 4 o'clock in the afternoon, however, unfavourable symptoms had set in, and at 7.30 operative interference was decided on. Median laparotomy disclosed four perforations of the small intestines and the cavity of the peritoneum contained some doubtful looking fluid, with particles of food and false membrane. Recovery, which was delayed by an attack of pneumonia, took place in about six weeks, the missile coming away in a stool on the ninth day. In the second case a dragoon was stabbed in the left iliac region and immediately vomited some coffee he had just taken. Four hours later he was admitted to the Vincennes Hospital, his general condition being then satisfactory. There was no nausea, and his pulse beat firmly at 70. An attempt was made to probe the wound, but the stylet could not be introduced. A perforation seemed uncertain; an expectant treatment was adopted, and the next morning the patient was so well that he was allowed several spoonfuls of milk. A few hours after this a complete change took place, and urgent signs of generalized peritonitis showed themselves. Median laparotomy was at once performed, but the patient was so weak that only the small intestine could be examined, the result being negative. The abdomen was then closed, after the cavity had been washed out with warm artificial serum. Shortly afterward the man died, and at the *post-mortem* examination it was found that the large intestine had been pierced. The author believes that if preventive laparotomy had been adopted the patient would have been saved. There is no intrinsic danger in laparotomy nowadays, he says. Then why delay it even in the most doubtful cases? In the instances cited the impossibility of sounding the wounds contributed largely to the postponement of the operation; but considering the small-sized projectiles now in vogue this method of establishing a diagnosis should not be accorded too much weight, especially when anesthesia has not been employed. Exploration is, no doubt, of great value where practicable, but inability to effect it is no proof of the absence of perforation. Statistics may be unfavourable to immediate laparotomy in penetrating wounds of the abdomen, but the author, nevertheless, maintains that it is generally indicated, and in this opinion he apparently has the support of M. Chauvel.

Disinfection of the Hands.—Menge (*Münchener Medizinische Wochenschrift*, No. 4, 1898), while contesting the claim made by Reinicke, Ahlfeld and Vahle that the skin of the hands can be thoroughly disinfected by mechanical and chemical means, especially by means of washing with alcohol, recognizes the fact that this medium has distinct bactericidal powers, especially in regard to those vegetative bacterial forms which have lowered resistance, and that it infiltrates all the superficial layers of the epithelium. Moreover, from its hardening influence, its power of abstracting water, it retains the more resistant forms beneath the epiderm. The especial advantage it possesses is that it does not act upon the living cells of the body. It is worthy of note, however, that if after a thorough brushing with alcohol the hands are subse-

quently soaked in water or the fluids of the body, the epidermic layers again become softened, desquamate, and may enable spores or other resistant forms of life to escape into the wound. For this reason the use of gloves is particularly advisable. Those employed by Mikuliez, Zweifel and others are of stockinette and extremely thin. They can be readily sterilized by heat and should be worn by the assistants who handle instruments, handle dressings, thread needles, and perform other work accessory to the operation. They are also satisfactory when applied by the surgeon himself, provided he operates by the dry method. If, however, he employs lotions, or if the operation is such that the gloves are necessarily soaked with the fluids of the body, the skin of the hands becomes wet, the shedding of epithelium takes place, and infection may readily pass through the thin porous substance of which the gloves are made. The objection made against gloves that they lessen tactile sensibility, though tenable, is not prohibitive, since by use the surgeon soon becomes accustomed to them, and since he can discard them at any moment if it should be necessary, as before putting them on his hands should be disinfected exactly as if he were not to wear them.

Fritsch has raised the objection that by the rough surface the gloves more or less injure the living cells, an objection which has also been raised to sponging. This can be obviated by the use of rubber gloves, the main objection to which lies in the fact that they are extremely hot and are readily torn or cut in tying down ligatures, inserting sutures, or operating with a knife.

To provide gloves which will be cheap, easily disinfected, and yet impervious to water, is the object of Wollfler. He states that the requirements of surgical gloves are that they shall be water-proof, smooth, comparatively durable, not hot or irksome to wear, and readily disinfected. To meet these requirements Menge, having thoroughly dried the stockinette gloves, immerses them in a solution made up of 100 parts of xylol and 20 parts soft paraffin, which melts at a temperature of 45°C. This fluid is warm, and the gloves are allowed to lie in it for a quarter of an hour. They are then wrung out and dried in a warm oven. Water and the fluid ascites flow from the surface of this glove exactly as from that of a feather. It is not, however, absolutely impervious to liquids. It fits the hand neatly and presents a comparatively smooth surface. It is not easily torn or cut and is comfortable to the hand, since it still remains porous. It can be sterilized by steam under pressure. It is cleansed by using soap and hot water.

Menge states that since alcohol lessens the spaces between the epithelial cells and makes a more compact layer which practically encloses and prevents from escaping germs which may lie in its substance, it would be well for the surgeon not to employ any watery solution after having used the alcohol. To prevent the fluids of the body doing away with the beneficial effect of alcohol, he suggests that after the thorough cleansing the hands should be washed in the paraffin-xylol solution and dried with a sterile towel. The epidermis after this procedure seems almost unaltered, excepting that it is somewhat more shining. Water runs from the surface as it would from oil-cloth, and softening of the epidermis is impossible. Thus the germs which lie in the deeper layers of the skin and are not destroyed by the antiseptic solutions are kept there even though the hands are soaked in watery media a long time. Of course this does not provide for the bacteria which eventually escape through the openings of the skin glands. This protective coating also serves against the entrance of septic material through the skin of the surgeon's hands. The thin water-proof coating may be removed by rubbing with ether and washing with hot water, alkaline soap, and a brush.

Menge suggests the following method of disinfecting: thorough mechanical cleansing by means of hot water, alkaline soap, and a brush, careful attention being paid to the nails; after that long-continued softening of the

hands in water, then thorough disinfection of the skin by means of a watery or weak alcoholic solution of sublimate, and soaking of the skin in seventy per cent. alcohol and drying with a sterile towel, finally pouring a paraffine-xytol solution over the hands and again drying with a sterile towel.

OBSTETRICS AND GYNÆCOLOGY.

Axis-Traction with ordinary Forceps.—Mr. T. Archibald Dukes describes the following method:—Insert the blades and let the handles assume their natural position close to the symphysis pubis pointing forwards. Allow them to remain during the whole process of extraction in this, the position which they naturally assume, pointing more and more forward as the head descends. To extract, grasp the forceps at or above the lock with the left hand and place the hollow of the right hand on the posterior surface of the extremities of the handles, so as to be able to push with the right hand and pull with the left. Then, keeping both arms the whole time rigid and extended, place your own chest facing the patient in the desired line of traction and pull with your back from the coccyx. The occasional difficulty of firmly grasping the forceps above the lock with the left hand is easily met by looping a fillet or handkerchief over the lock and round the wrist.

Dr. Le Page criticises the above "most powerful method," and says that axis-traction has for one object the avoidance of powerful methods. "*Arte non vi.*" He asserts, contrary to the expressed opinion of Dr. Dukes, that considerable compression would be necessary to prevent slipping of the forceps whilst such Herculean efforts were in progress. He further points out that it is erroneous to write, "let the handles assume their natural position close to the symphysis pubis," for, with the head above, the brim when the blades are in position, the forceps are against the perineum and not the pubis. The arrangement advised by Dr. Dukes is not an axis-tractor but a means by which the forceps are simply converted into a lever of the third class, the head being the weight, the end of the handle the fulcrum, and the lock the power. Dr. Le Page's "axis-tractor" converts any ordinary long forceps, in a moment, when *in situ*, into an axis-traction forceps.—*B. M. J.*

Asphyxia in New-born Infants.—Dr S Stringer recommends that in cases of asphyxia the funis should not be severed but the placenta immediately delivered cleared of clots by means of hot water and freely exposed to the air. He asserts that circulation will go on for several hours, and that by this method many children can be saved who must otherwise perish. The idea is that atmospheric aëration goes on and that intra-uterine life prolonged outside. The method seems worth a trial.—*Jour. Amer. Med. Assoc.*

Vesicular Mole and Drugs.—Keiffer attributes the development of vesicular mole to the effect of emmenagogues taken during pregnancy. They set up proliferating arteritis which interferes with the normal development of the placenta. He noted that in three cases where vesicular mole had developed, the patients had taken emmenagogues—piscidia, viburnum, saffron and salicylate of soda. The latter drug had been prescribed to a young primipara for amenorrhœa. Hæmorrhages followed, and Keiffer diagnosed pregnancy. In spite of appropriate treatment abortion occurred at the sixth month, and a vesicular mole was expelled. No normal placental tissue could be found; there was marked endarteritis, many vessels in the membranes being blocked by their proliferating endothelium.—*B. M. J.*

Syphilis of the Uterus.—Legrain reports three cases of syphilitic disease of the uterus. In all three cases the uterus was enlarged but not fixed; the cervix was not ulcerated or eroded. In two cases there was

metrorrhagia and anæmia, and in the third purulent endometritis. Two of the patients had other syphilitic manifestations. Under specific treatment all recovered, the uterus resuming its normal size. The author considers these cases to be parenchymatous and fungous metritis caused by diffuse cell infiltration of the uterus rather than gummata. He thinks syphilis of the more common than is generally supposed, and that some cases diagnosed as fibroids are really syphilitic.—*Id*

The Rapid Cure of the Incoercible Vomiting of Pregnancy.—Jules Geoffroy has found that this vomiting is due to a reflex contracture of the pylorus, the duodenum and especially the ileo-pelvic curve of the colon. Prolonged palpation, which permits us to recognize the condition of hyperæsthesia and of contracture, constitutes the best form of treatment. Its action is both sure and rapid. In from one to three short sittings it quiets the hyperæsthesia and overcomes the contracture. The vomiting stops and the cure is complete. The author reports several convincing cases in support of his argument.—*Amer. Jour. of Obs.*

After-Treatment of Abdominal Section.—Christopher Martin assures us that an extra half-hour's work before an operation is worth a week of anxious after treatment. To keep patients rigidly on their backs for 48 hours, not even allowing the nurse to turn them gently on to the side, is cruel and needless. Let the patients lie in the attitude that is most comfortable to them, and allow the nurse to turn them from time to time.

The dressing should be simple. Cover the incision with a pad of iodoform gauze. Over this a square of lint is laid and fixed with three or four bands of rubber plaster. Over all an ordinary abdominal binder is pinned. The gauze should be changed at the end of 24 hours, and after this it need not be disturbed for a week. The aim should be to keep the wound as dry and clean as possible. Wet dressings are an abomination; they simply promote suppuration. Do not dust wounds with boracic acid powder or iodoform powder, except in septic wounds when use iodoform freely. Powders are apt to form unpleasant crusts or cakes which delay the healing process. For similar reason do not seal the incision with collodion.

For suturing the abdominal wall silkworm gut is an ideal material. Do not use buried sutures, and never suture the abdominal wall in layers. Catgut, even if aseptic, dissolves too soon, and silk, no matter how carefully sterilized, is apt to become infected and cause abscesses and sinuses. Buried sutures of silkworm gut frequently work out, months after the operation, by a process of quiet suppuration. Invariably use silkworm gut, applied as an interrupted suture, passing through the whole abdominal wall. Leave the stitches in for twelve or fourteen days and sometimes longer. It is a great mistake to remove the sutures, as some Surgeons do, as early as the sixth day. The longer the wound and the more likely the patient to vomit or cough, the longer should the sutures be allowed to remain. Stitch abscesses ought never to occur in a clean case. Still they do occasionally occur. If only one stitch suppurates, remove it at once. If all the stitches suppurate remove those which are worst. If all be equally bad remove the alternate stitches, leaving the others in for two or three weeks to support the wound during the process of granulation.

Five or six years ago the rule was "when in doubt, drain." Now it is "when in doubt, don't drain." Drain in septic and suppurating cases or where there is much bleeding. But do not consider that a little clean blood or ovarian fluid in the abdomen does any harm—in fact it may, on being reabsorbed, have some nutritive value. A drainage tube is apt to be a channel of infection, and may convert an innocuous effusion of blood into a stinking collection of grumous pus. When you have to drain use iodoform gauze rather than the glass or rubber tube, and if possible, drain through the

vagina. The glass tube quickly becomes shut off by lymph from the general peritoneal cavity and then ceases to be of any service. Moreover, if either a tube or a gauze drain be left in the abdominal wall more than 48 hours the track is apt to heal by suppuration, a weak spot is left in the abdominal wall and a ventral hernia will probably result. Harm seldom results from a vaginal gauze drain.

Always give a dose of morphia at the close of an abdominal section either hypodermically ($\frac{1}{4}$ gr.) or by suppository ($\frac{1}{2}$ gr.). It diminishes restlessness, combats shock, tides the patient over the first few hours of agony, lessens the tendency to hæmorrhage, and in many cases lessens the tendency to vomiting. This single dose of morphia is not sufficient to paralyze the bowel or to interfere with the purgative treatment of peritonitis should this complication subsequently occur. Morphia may do good in those anxious cases where, some three or four days after the operation, the patient is worn out with frequent vomiting, pain and want of sleep, and is getting into a condition of dangerous prostration and restlessness. In such cases there is generally some degree of peritonitis, and therefore it would seem that morphia was contra-indicated. If, however, the patient's bowels have acted freely give morphia. In the great majority of cases, the patient sleeps, the vomiting ceases, the pulse becomes slower and stronger, the prostration passes off—in fact, the administration of the morphia marks the commencement of her recovery.

It must not be supposed from the above that Martin has abandoned the purgative treatment of peritonitis and reverted to the old opium treatment. If a patient after, say, an ovariectomy develop on the second, third or fourth day, the well-known symptoms of peritonitis (vomiting, tympanites, quick pulse, anxious face, dry tongue, &c.), give at once 5 grs. of calomel and follow it in the course of 2 or 3 hours with a sharp saline purge (sulphate of soda or a Seidlitz powder). In mild cases give repeated small doses of calomel ($\frac{1}{10}$ gr. every hour) until the bowels act freely. Where there is constant retching, these small doses of calomel are generally retained, while the saline draught is at once ejected. In addition order a turpentine enema to be administered every 4 hours, and the flatus tube to be passed frequently. The patient's strength should be maintained by nutrient enemata of brandy and beef tea (each nutrient enema being given an hour after each turpentine enema). If she be much exhausted give champagne freely by the mouth. Even if she be vomiting, it is less exhausting for her to have something in her stomach to bring up than to retch ineffectually. There can be no doubt that in an ordinary case of post operative peritonitis, if we can purge the patient she will probably recover, whilst if the bowels refuse to act she will probably die. As long as her pulse is maintained, we should persevere with the calomel and enemata until the bowels move. It is marvellous how tolerant these patients are of big doses of calomel frequently repeated. To make it a routine line of treatment to purge every patient, on the second day after an abdominal section, is unnecessary. If the patient have no bad symptoms, no distension, no sickness, &c., there is no need to worry her with purgatives and enemata. If she be doing well, we need not bother about the bowels till the fourth day, when, if they have not acted naturally, she may have a saline aperient, a dose of liquorice powder or an enema.

Forty-eight hours' deprivation of fluid is not only cruel, but unnecessary and harmful. Seldom keep a patient more than 6 hours without fluid. Start by giving her some bland fluid, such as barley water flavored with lemon, and of this allow a pint during first 24 hours. In cases where there has been much loss of blood give it very freely. Even if the patient be sick, give her barley water as it is less distressing to her if she has something to vomit. Never give ice to patients after an abdominal section. This early administration of fluid is not only

merciful but does good. It diminishes shock and restlessness, fills the depleted blood-vessels and by washing out the kidneys helps to remove toxins from the system. It does not interfere with the action of purgatives should peritonitis ensue. On the second day in addition to barley water, allow milk, milk and soda, tea, water gruel, or small quantities of beef-tea or chicken broth. On the third and fourth days allow milk pudding; on the fifth day, fish; and on the sixth day a little boiled chicken. In cases of persistent vomiting, shock, hæmorrhage, or exhaustion, give champagne freely by the mouth and brandy and beef-tea enemata. In grave cases, enemata of hot salt water (one drachm of common salt to the pint) and injections of saline solution into the submammary cellular tissue are of very great value.—*British Gynecological Journal*.

Marriage and Heart Disease.—Vinay discusses the question—Should a girl of marriagable age subject to heart disease be allowed to marry? He says that matrimony is not to be forbidden when the lesion is compensated and no complication has arisen. But the patient must be reminded that repeated pregnancies will influence the cardiac disease prejudicially. On the other hand, marriage must be forbidden if evident signs of insufficiency have been detected, such as pulmonary congestion, hæmoptysis and irregular pulse. Most serious in this respect is persistent albuminuria with hypertrophied heart, which is certain to involve grave trouble during pregnancy and to compromise the child's life. Even when a patient is allowed to marry, she must be carefully watched during pregnancy, when some of the worst complications, due to thoracic and renal changes are very apt to set in unless the patient modifies her habits and her diet. The physician should insist upon repose, milk diet, aperients and free and frequent dry cupping to the thorax. In this way the tendency of pregnancy to disturb the circulatory equilibrium is counteracted. The physician, directly pregnancy is confirmed, should look out for the first evidences of failure of compensation, such as dyspnoea, palpitation, a tendency to bronchitis and a pulse which, though it may be regular in rhythm and volume, is clearly too rapid. These are what Vinay terms gravidocardiac complications.—*B.M.J.*

Fibromyomata of the Vagina.—Phillips reports two cases of this rare and somewhat important condition. He has collected 27 additional cases from medical literature since 1882. He concludes that vaginal fibromyomata are invariably single and usually slow growing; their situation is most frequently upon the anterior vaginal wall and they may be sessile or pediculated. They have practically no effect upon menstruation conception, or the course of pregnancy, but may lead to serious dystocia. Symptoms depend upon size and situation, and are usually due to direct pressure exerted on neighbouring viscera. Sloughing is the most common change in the tumour during the life-history. Removal is best carried out by enucleation and suture or stuffing with gauze.—*B.M.J.*

KEDARNATH DAS, M.D.

PATHOLOGY AND BACTERIOLOGY.

Micrococcus Melitensis (of Bruce).—By Herbert Durham, *Journal of Pathology and Bacteriology*, December 1898. The fact that Professor Wright, of Netley, has obtained a typical serum reaction with the *Micrococcus Melitensis* in cases of soldiers invalided home from India, makes the disease one of interest to practitioners in this country. In this paper some points in the morphology of the organism are first described. In cultures which have been grown at ordinary temperatures in either agar or gelatine, at 18 to 20 C, a bacillary form is obtained, the length of which is from two to four times the breadth. In subcultures in broth or on agar at the body temperature they revert to the

coccus form, showing that the bacilli are not the result of accidental contaminations.

Hitherto, while monkeys have been readily infected, the attempts to give fatal infections to rabbits and guinea-pigs have failed. The author, however, succeeding in accomplishing this by the use of Cantani's method of serial intracerebral injections. The disease was in this way intensified until a single loop full of a culture was fatal in a few days. A slower infection was also produced in these animals by intraperitoneal injections of the organisms, the disease lasting weeks or months. After death the micrococci were found in most of the organs, but were especially abundant in the bone, marrow and spleen. It was also found in large numbers in the urine and in the kidneys, even when it could not be found in the other organs, and could be cultivated from both. This is a most important point from the point of view of the infection, and of Hughes' well-supported opinion of the relationship of the disease to bad drainage and other similar sanitary defects. The same is also true of enteric fever but observations are wanting to show how long after recovery the urine remains infective. The author records a case in which very nearly seven months after inoculation the micrococcus was found in the urine and spleen.

The author confirms the truth of the sedimentation test, and points out that it is most marked in cases which had died after a long period, and in whom, after death there were but few micrococci found, from 1:1000, to 1:5000. On the other hand, it was low in those who died rapidly after intracerebral inoculation, when it did not rise above 1:100 or 1:200, and in cases which died at a later period, but in whom there were many organisms at the time of death. From this he concludes that the formation of large quantities of agglutins is dependant upon the extent to which the resistant power of the animal is taxed in the endeavour to overcome the bacilli-bacteria; if the resisting power is overstrained there is but little production; if it is more or less severely strained, the production is correspondingly considerable, according to the amount of the strain; while, lastly, if it is hardly put to any strain, the production is small. In this connection the statements of Courmont that in typhoid fever in man an irregular agglutination curve is of bad prognosis is interesting.

A New Preparation for Rapidly Fixing and Staining Blood.—By Louis Jenner. *Lancet*, Feb. 11th, 1899. It is claimed for the following new compound blood stain that it is a single compound solution, easy to make up, which keeps well, which will fix and stain ordinary blood films in two minutes, and which demonstrates with perfect clearness and in well-marked contrasts red blood discs, blood platelets, the nuclei of white blood cells, the fine granules of the polymorpho-nuclear leucocyte, as well as bacteria, the malaria parasite and filaria, when these latter are present. It is a solution of methyl alcohol of the amorphous precipitate obtained from watery solution of eosin and methylene blue when they are mixed together, and may be prepared most simply by mixing 125 cubic centimetres of a 0.5 per cent. absolute methylene alcoholic solution of eosin with 100 cubic centimetres of a 0.5 per cent. solution of the medicinal methylene blue also in an absolute mythylc alcohol; or the compound body can be obtained direct from R. Kanthack of 18, Berner St., W., who also supplies the solution ready for use.

Cover-glass preparations are made in the usual way, and as soon as they are dry, few drops of the staining and fixing solution are poured on, no previous fixation being required. After one to three minutes the stain is poured off, the specimen washed in distilled water till the film has a pink colour, which usually happens in from five to ten seconds. It is then dried and mounted in xylol balsam.

The red corpuscles are of a terra-cotta colour; the nucleoli of the white corpuscles are blue; the platelets

mauve; the granules of the basophils when present are dark violet, the granules of the polymorpho-nuclear white cells and of the myelocytes are red, and bacteria, filaria or malarial parasite are blue.

L. ROGERS, F.R.C.S.

Public Health and Sanitation.

Vaccine-Virus and Transmission of Disease.

—In continuation of our review on pp. 126-127, of Dr. Copeman's mode of preserving vaccine lymph, we here reproduce from the *Philadelphia Medical Journal* an eminently practical letter by Dr. R. Slee: "The organisms of tuberculosis, diphtheria, anthrax, etc., are rarely, if ever, found in vaccinevirus. Many competent observers, among them Lothar, Meyer, Guttman, Straus, Chauveau, Jossier, and others, have thus far failed to find tubercle-bacilli even in the virus collected from cows known to be tuberculous or to produce tuberculosis in test-animals with this virus; and I must say that, with the exception of some staphylococci, I have failed in a large number of tests to find anything bearing resemblance even to a pathogenic organism. It is true that cultures made from points *may* and *do* swarm with organisms of a harmless character, but the same organisms inhabit our daily bread, and our bodies likewise, and the finding and counting of them is simply a waste of time. Their presence may indicate uncleanly surroundings and lack of care, or they may be due altogether to climatic and atmospheric conditions beyond the operator's control.

With regard to the staphylococci mentioned, they correspond minutely in morphologic character with white-pus cocci. These are almost invariably present in the normal skin of man and beast, and they do not necessarily excite or produce pus of themselves. I have made many attempts to collect sterile serum from the calf after a thorough antiseptic toilet, then scarifying, as is usual when vaccinating, and collecting the serum on needle as it oozes up through the skin. Serum thus collected is always contaminated, generally by the organisms mentioned, and many of its friends and neighbours known to be harmless. Yet many bacteriologists would probably condemn a virus in which they might find the staphylococci, simply on the evidence of an agarslant, never for a moment taking into consideration the fact that they are probably non-virulent, certainly so if stored in glycerin for a short time. So far as I am aware, Klein is the only authority, who has found the streptococcus of erysipelas, and this was in human virus.

I do not wish to be misunderstood. I am not in favour of any kind of virus that has not been subjected to the glycerin for three weeks at least.

I have found by many trials that glycerin is by far the best medium to use as a sterilizing and preservative agent for the virus. What I say is simply confirmatory of the work of Kent, Copeman, Chamber, Straus, and others.

In America, the honor of introducing glycerinated pulp vaccine belongs, I believe, to Huddleston, of the New York Board of Health. My work with it dates from about the same time. King, of the Indian Service, Calcutta, proposed lanolin as a medium, and, without any knowledge of his work, I thought, for a time, I had secured in it a valuable medium, but it has some drawbacks. Ropke proposes salicylic acid and alcohol in addition to glycerin, and Kitasato and Mueno describe a method, using from 0.66% to 0.8% carbolic acid. I am quite sure that any one who reads the splendid article by Weaver in the *Journal of the American Medical Association* for December 26, 1896, or Copeman's brilliant résumé in the *Lancet*, from May 7 to 21, 1898, will acknowledge that the production of vaccine-virus has been revolutionized during the past two or three years, and that the death-knell of the ivory point has pealed.

With regard to the sore arms, I would say that I have notes of several quite severe infections, in which virus known to be sterile was used, the patients undoubtedly infecting the wound by unclean hands, clothing, or other means. There are too many elements to be considered to state positively that an infected wound following vaccination is due to the virus. A man in Brooklyn in apparently good health pricked himself with a pin recently and died of rapid septic infection. What if he had been vaccinated the same day?

By vaccinating calves with sterile virus and continuing asepsis as far as possible during incubation, one can produce right along a crop of typical cowpox, which, when removed (again under strict precautions) is not "an offensive mass."

I believe the degree of pitting after vaccination is in direct ratio to the amount of infection. A pure vaccination leaves very little mark. If made subcuticular it will give complete protection without any scar to speak of. There is another fact that I am not aware has before been mentioned. If the pulp from a pure pock on the cow is collected at say the fourth or fifth day, and if there is no suppurative process going on beneath the vesicle, there is scarcely any flow of serum. I believe that in order to obtain serum in commercial quantities, it is necessary to vaccinate from cow to cow and thus perpetuate a form of mixed infection that will cause a mild superficial suppuration. When this is done serum will flow in quantities. If, however, the vaccine is kept pure, the serum will not be produced so freely.

I believe that the so-called areola is not due to the vaccine, but to some mild extraneous infection. I have no hesitation in placing as many as one hundred squares, each at least an inch across, upon the abdomen of a six-months old calf, leaving only from $\frac{1}{4}$ to $\frac{1}{2}$ an inch of normal skin between them, knowing that the skin will remain normal in color and condition, that the areola will be represented only by a narrow red line of say an inch in width, and that there will be little increase of temperature, and that vaccine produced under these circumstances will yield a pure vaccinia, but it will not do to put this 'rather offensive-looking mass into a bottle along with glycerin.' It must be carefully mixed with certain proportions of *sterile glycerin* and preserved under strict aseptic surroundings."

Medical Societies.

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY.

A MEETING of the Society was held in the University Library on Friday, January 13th, at 5-15 p.m.

Lieut.-Col. HENDERSON, I.M.S., was voted to the Chair.

Present: Lieut.-Col. Henderson, I.M.S.; Majors Baker and Dimmock, I.M.S.; Capt. Burnett, I.M.S.; Dr. Jan Mahomed, Dr. Rozario, Dr. Kalapesi, Dr. R. Row, and Capt. Meyer, I.M.S. (*Honorary Secretary*).

Business :—

1. The voting papers which had been circulated for the usual annual election of the Committee resulted in the election of the following gentlemen :—Col. Hay, I.M.S.; Lieut.-Col. Hatch, I.M.S.; Lieut.-Col. Boyd, I.M.S.; Lieut.-Col. Davidson, I.M.S.; Majors Dimmock and Quicke, I.M.S.;

Drs. Temulji Nariman and Edulji Nusserwanji and Capt. Meyer, I.M.S.

2. The following two gentlemen were elected Vice-Presidents for the year :—

(a) Col. Hay, I.M.S.; proposed by Major Dimmock, I.M.S., seconded by Dr. Kalapesi.

(b) Lieut.-Col. Hatch, I.M.S.; proposed by Dr. Jan Mahomed, seconded by Major Dimmock, I.M.S.

3. Capt. Meyer, I.M.S., was re-elected Honorary Secretary, on being proposed by Lieut.-Col. Henderson and seconded by Major Dimmock.

4. The accounts for the past year were laid before the meeting and passed. They showed a balance of Rs. 802-5-0 in favour of the Society.

5. The following papers were next read :—

"ON THE ACTION OF BACILLUS TYPHOSUS AND ITS ALLIES."

By R. ROW, M.D., B.C. (London), L.M.&S. (Bombay).

THE organisms with which we commenced our work were the *Bacillus Typhosus*, *Bacilli Coli Communis* and *B. Enteritidis Gartneri*. The first two are so well known to you, that I need scarcely take up your time in describing their morphology and their chemical reactions. But the last is of a more recent discovery, and it may be interesting to you to know that it is an organism which gave rise to an epidemic of a special kind of enteritis in Germany, and when traced was found to be the cause of "meat poisoning." The organism stands midway between the Typhoid group and the large *Coli* group.

It gives a growth on Agar very like the Typhoid, if anything, and a little more vigorous. It gives a uniform turbidity in Broth with a faint scum. It is very actively mobile, like the *B. T.* It also resembles the last in its incapacity to coagulate milk. On the other hand *B. Gartneri* resembles *B. Coli C.* in producing gas bubbles in Glucose media, in its coloured growth on potato and its capacity to produce Indol, though in all these particulars it does not come up to the *B. Coli* in efficiency. It differs from the *B. C. C.* and *B. T.* in being much more delicate to live, as I found that my stock specimens required much greater care in subcultures than the other two. It was with very great trouble that I succeeded in rejuvenating my London specimen of *B. G.*

Although it would be interesting to have, side by side, the results of the products of the three organisms which we undertook to study simultaneously, the results which we obtained were so very similar, that I propose to confine myself to some of the experiments on *Bacillus Typhosus* and refer to those of *B. C. C.* and *B. G.* only, where some great departure was observed.

SOME EARLY EXPERIMENTS.

The first point we thought of ascertaining was to see whether in Vitro the cultures gave any soluble toxins, and whether these organisms gave any digestive products in Proteid Media.

And secondly, whether in the natural course of the disease, any such digestive products could make their appearance in some of the organs and thus contribute their share in the production of the symptoms.

With this view the organisms were grown in :—

- (1) Peptone Broth.
- (2) Alkali Albumen.
- (3) Another variety of Alkali Albumen.

I may summarise the outcome of all these cultures as follows :—

After three to four weeks' incubation the growths were filtered through a Pasteur-Chamberland filter, and the clear filtrate injected intravenously into rabbits.

The first filtrate (from Broth culture) gave us no result worthy of importance as far as the thermometric and general effects were concerned.

But the filtrates from the Alkali Albumen gave decided results indicating thermotaxic disturbance. Thus, while a dose of 2-4 cc. of Alkali Albumen No. 2 gave a fall of temperature varying from 3° to 4°, a similar dose of the filtrate from the growth in Alkali Albumen No. 3. gave a distinct rise of as many degrees. It is interesting to note that the after effects in both the cases were not of a particularly marked nature, for though, at the end of four weeks, the animals

Now I proceed to lay before you a short summary of the results obtained by intravenous injections of this "toxin"

into rabbits. The quantity used was from 2cc. to 5cc. of ordinary broth cultures of about two weeks standing, sterilised at 60° for 5 minutes. The invariable symptoms are—

For one to two hours: Rise of temperature.

At the end of two hours: Rapid rise of temperature, and diarrhoea—feculent and fluid.

At the end of three hours: Profuse Mucoid diarrhoea leading to rapid fall of temperature, collapse, and death without paralysis or convulsions.

Post-mortem: Occasionally subcutaneous hæmorrhages.

Absence of redness or any other obvious change in the Peyer's Patches.

Abundant glairy fluid in the small intestines, which in the cases we examined was free from bile salts or bile pigment, but rich in mucous and free from bacilli.

Heart muscle, phrenic and anterior crural nerves free from any degeneration.

Such, Sir, were the results we have been able to obtain with the products of *B. Typhosus*. And I may add of those of *B. C. C.* and *B. Enteritidis-Geartneri*. For though there are great and interesting differences in the physiological effects of the products of each of the three organisms—a subject which I hope to treat on a future occasion—the resemblance of the sum total of the clinical effects on the animals experimented on seems to be very great.

Is it a wonder, then, that the variety in the clinical picture of the "Typhoid Fever" should be also great? Could it not be that only a certain proportion of the cases of Typhoid are due to a pure infection by Typhoid Bacillus, while in others the infection is mixed?

Major Dimmock, I.M.S., said—

Dr. Row is to be congratulated on the exceedingly interesting paper he has just read, and I am sure it was listened to with the greatest interest by all the members present. Most of us have not the time to devote to the higher studies of bacteriological science, but we are always on the watch for the practical outcome of such distinguished investigations, and what has been running through my mind while listening to the results of the various experiments has been the practical application of them to clinical observations.

Dr. Row has referred to the probability of many cases of typhoid being influenced by the absorption of other organisms into the system than those of the specific bacillus typhosus, but I am inclined to think that the course of the pyrexia in different subjects shows a variance which is due not so much to the influence of other toxins as to the individual peculiarity of the patient. The course of the disease in children, and in typhoid ambulans presenting such a variance as these types do from the usual form of typhoid fever must be due to a constitutional peculiarity. In the severer types, the variations are also due to a greater tendency to necrotic results in some persons than in others, so that we have larger areas of ulceration in the collections of lymphoid tissue, which naturally produce severer constitutional effects. It is to combat these effects to which the skill of the physician is directed, so that reliance upon extraneous causes might possibly mislead him.

That no doubt the investigations described by Dr. Row shew an association with the effects of other bacilli and their toxins than those of bacillus typhosus, but I was not convinced that a case of typhoid was affected by them very frequently, though, no doubt, some of the cases of varying phases of suprema might be explained in this way.

Dr. Row in reply said—

As Major Dimmock has given me an opportunity to refer to some interesting points, I take this occasion to give a short summary of the Bacteriological examination of four spleens which we had the opportunity of examining. In two spleens which we obtained from cases which terminated after three to four weeks' illness with the classical symptoms of typhoid, we were able to obtain pure cultures of typhoid without any contaminations. In a third spleen, from a patient who also presented (*i. mortem*) all the salient features of the disease; in the Plates we prepared, side by side with the typhoid colonies, we found typical colonies of *B.C.C.* and that the last organism was not simply saprophytic was shown by the fact that the organisms were not always found in association in every Typhoid spleen that we had the opportunity of examining, but also that the organisms were very virulent—in fact, these were the organisms that were used for our experiments cited in the last section. And lastly we obtained from a spleen of a patient suspected of Typhoid—but in whose case there was a difference of opinion among the physicians as to the identity of the case—we obtained pure cultures of a variety of *B.C.C.* most virulent to guinea pigs; and though in this case the other *post-mortem* visceral changes did not give us any indication of its being typhoid, yet the difficulty of a correct diagnosis was by no means small. It is interesting to note that we did not obtain a Widal Reaction in this case, both *ante* and *post-mortem*.

REPLY OF CAPTAIN J. BLACKBURNE SMITH, I.M.S., TO CAPTAIN G. S. THOMSON, I.M.S.

I have read Capt. Thomson's reply to my criticism and while not anxious to prolong the correspondence, I do not wish it to appear that I accept his dicta regarding disinfection. So far, I have no reason to change my opinion that disinfection, thoroughly carried out, is an efficient means of dealing with plague. Karad was attacked early in the rains last year, but up to date, so far as official returns go, it has this year remained free. Surgn.-Capt. Thomson has admitted to me privately that he made a mistake regarding two of the indigenous cases he mentioned in his paper. The explanation of the third I have already given.

In talking, however, of "recrudescence" it is, I think, too often forgotten that "re-infection" may take place. One attack does not protect a town from another; and this is just as reasonable an explanation of the second epidemic in Karachi and Poona as that they are "recrudescences" properly so called. Capt. Thomson cites certain abuses connected with disinfection operations which he seems to think renders them useless. Without wishing to reflect on the Satara operations, I affirm that all the abuses he names can be either absolutely prevented or minimized to such an extent as to be inappreciable. They were so minimized in Karad. It was the business of a responsible person—one of the Plague inspectors—to see that all the apparatus was in proper order—vessels tarred and the few brass pumps in use well oiled. As a matter of fact, brass pumps were very little used in Karad, as we preferred the Chinese wooden ones. In these we removed the metallic valves and substituted glass ones. But, even though metallic pumps were used, I think it absurd to suppose that a stream of perchloride solution is reduced to any appreciable extent in the few seconds it takes to pass over the metallic surface, and even granting it is reduced to 1 of its original strength, this is sufficient, according to a recent investigation by Watkins Pitchford, to kill the plague bacillus in five minutes, and in one experiment he found that 1/1000 was sufficient.

As regards the supervision of 15 gangs it is quite possible, unless they are very much scattered indeed, to see each once a day, and it becomes comparatively easy when they are working in groups. In any case the check is the *unexpectedness* of the visit.

I did not for one instant explain recrudescences by saying "you expect too much from disinfectants." I say that in some way or other the disinfection has been imperfect, and, instead of decrying it, I would strive to find out what was the cause of failure. Capt. Thomson appeals to Manson's recent book in such a way as to lead one to infer that Manson is opposed to disinfection for Plague. I may say I think Manson's account of Plague is not up to date and ignores the investigations of Indian medical men, and he might usefully have consulted the transactions of this Society with regard to septicæmic, pneumonic and abdominal plague. Still to Manson, Capt. Thomson has appealed and to Manson let him go. "Quarantine may, and doubtless does, keep out a proportion of the infected, and to this extent it does some good; but it must be combined with careful general sanitation, with thorough disinfection, with the destruction of all discharges and fomites with the speedy discovery and isolation of the sick, with the evacuation of infected houses and even of neighbourhoods, and with the wholesale destruction of vermin." * * * A rational quarantine, plus rational plague measures—isolation of sick, separation of suspects, disinfection—is what is wanted." And again, regarding hospitals, "Hospital work is only dangerous when patients are allowed to lie in their infected clothing, when disinfectants are not properly used, and when attendants are careless, stupid or rash." The italics are mine. This is a case of Balaam over again.

I regret I have not seen Mr. Hankin's report in full, nor Capt. Thomson's criticisms on it, but, in a summary of Mr. Hankin's work attached to the report of the Plague Research Committee, the following is to be found: "Mr. Hankin finds that the only substance capable of satisfactorily disinfecting a crowding floor is sublimate in an acid solution." But as we do not yet know when and how the plague bacillus exists in a house, surely it is too early to assume one has produced these conditions in a laboratory. With regard to chemical disinfection in laboratories, which Capt. Thomson thinks I have not sufficiently considered, I would again refer him to my former paper where I instanced iodoform as a case where the bacteriologists are groping about for an explanation of its bactericide action in surgery when the laboratory experiments had apparently showed it to have next to none. Whitewash is hydrated oxide of lime which, if I remember right, is in process of time converted into carbonate of lime by the action of the atmosphere; and carbonate of lime has, so far as I am aware, no action on perchloride solution.

To return to Karad. Regular evacuation of the town never took place. With a declining epidemic there was a returning population. The number 31 given by Captain Thomson as the number leaving the town is inaccurate for two reasons—it is the total of the excess of exits over entries in Karad observation camp and not the actual number who went away, and secondly, many people escaped at that time without passing through the camp. Then, again, disinfection had been going on, though with an insufficient staff, before September. Major Baker got sanction for a very large and immediate increase of coolies, and Capt. Thomson is therefore entirely in error when he says "disinfection was begun during a rapidly declining epidemic." As a matter of fact, disinfection was put on a proper basis when the epidemic was at its height, and it is at least a coincidence that from that time the epidemic decreased. As Capt. Thomson must be aware from the perusal of my report, there were two kinds of disinfection at Karad—*Case disinfection* and *general disinfection*. By the former, houses known to be infected were done as soon as possible after the plague case was discovered. The latter was intended to overtake the houses which were infected in the early part of the epidemic. As these were not known, it was decided to do every house not disinfected by "case disinfection." The general disinfection was begun on the 26th September; the case disinfection was in existence from the arrival of the plague column in Karad in July.

With regard to the hospital I would state that I was well aware that it was not ideal, but I would invite his attention to the fact that though overcrowded none of the attendants got plague *after* the disinfection of the wards began. The attacks of hospital servants were before my time, while the number 146 occurred while I was in charge. The majority of the deaths in August took place in the town and not in the hospital. Capt. Thomson cites his own personal immunity. Is it scientific to draw conclusions from one or two cases?

Capt. Thomson's remark regarding the morality of Europeans is unfortunate in view of the present agitation for a return to the C. D. Acts. Does he hold that it is more dangerous from a plague point of view, to be immoral in an annex than down in the native houses in the bazar?

Capt. Thomson does not yet see his fallacy with regard to prisoners. He quoted them as supporting his view that it does not matter how dirty a person is, provided he lives in a well ventilated place he will not get plague. They (prisoners) are not allowed to be filthy, and therefore his argument from them falls to the ground. As regards Brahmins, I call no man clean who habitually coudungs the floors of his house, and further I would point out that it is not so much personal filth as filthy surroundings that seem to predispose to plague. The escape of the Cantonment Jail and Sudder Bazar might just as easily be explained on the filth theory as on the fresh air one.

Capt. Thomson will admit that most of the Cantonments and Jails are cleaner than the surrounding native town.

I still maintain that until we are acquainted with the life history of the plague bacillus, all theories as to the causes of immunity, infection, and the like must be largely guess work. Capt. Thomson has not forgotten, I am sure, the wind-borne theory of cholera, nor the hereditary theory of tubercle, both of which were supposed to explain the facts.

As regards fresh air, we out-heroded Herod, for in houses known to be infected we made great gaps in the roof, and in all houses disinfected we made holes in the roof, sometimes in the walls, and sometimes through the floor of an upper storey to admit light and air into the part beneath. The Surgeon-General considered 3 feet by 4 feet over each infected room enough, and that was taken as a guide for all houses, but was much exceeded in many cases before his orders reached us. I also advocated, and do still, the entire unroofing of infected houses in villages. I believe it is our duty to use every method which holds out a reasonable hope of combating the disease. I would, however, prefer to pin my faith to efficient chemical disinfection than to the amount of fresh air which would enter through 1½ square feet aperture.

Capt. Thomson's remarks regarding legislation to prevent the erection of insanitary houses reads like part of the administration report on the Karad Epidemic which Capt. Thomson seems to have read carefully.

As regards Surgn.-Capt. Thomson's treatment with perchloride of mercury, I would ask him if he thinks one dram (½ gr.) of Liquor Hydrargyri perchloride, hypodermically on one occasion in each patient, is physiologically equivalent to half an ounce (½ gr.) by the mouth, much less to 3 ounces (1½ grs) in 24 hours (*vide* Gatacre's report, page 70). To me it still remains unproved that these heroic doses of mercury were absorbed at all.

In conclusion, I would add that since my own reply to Capt. Thomson's criticisms I have made enquiries and find that though wandering beggars were admitted to the Karad Plague Hospital none of them, so far as is known, belongs to the class Byragee.

Captain Thomson's proposal which had been set down for discussion at the present meeting was next considered. The proposal ran as follows: "That special subjects for discussion at a certain selected number of the Society's meetings be arranged for and papers be read and submitted by specialists introductory to the discussion of such subjects."

Lieut.-Col. Henderson, I.M.S., on the proposal being put before the meeting, said that he thought that the usefulness of the Society would not in any way be furthered by its being carried. He was of opinion that it would tend to render artificial the discussions at the expense of their originality, and that such a contingency was anything but desirable.

Major Dimmock, I.M.S., thought with the Chairman that it was binding the Society down to an artificial method of discussion by introducing some special subject for the purpose, and thought it more likely that the individual talents and experience of the members would be better elicited if they were left to select their own subjects, both for communication and discussion.

Dr. Jan Mahomed proposed (Dr. Kalapesi seconding), that Captain Thomson's proposal should first be considered by the Managing Committee before being laid before the Society.

To this Dr. Rozario proposed an amendment, which was seconded by the Honorary Secretary, to the effect that Captain Thomson's proposal be disposed of at once. This amendment was carried.

Capt. Thomson's proposal was then put to the meeting and lost.

The Honorary Secretary drew the attention of the meeting to the great difficulty he experienced in obtaining contributions to the Society's proceedings. At present the whole onus of managing the Society's affairs fell on the shoulders of the Secretary, and he appealed to the members of the Committee to assist him with a more active co-operation.

The Chairman thought that the Honorary Secretary had best make his appeal by letter to the individual members of the Committee.

The proceedings then closed.

A NEW DISEASE FROM EAST AFRICA.

It might naturally be supposed, says a Bombay contemporary, that at the present moment, Bombay was slightly crowded with diseases, and that there was barely room for a new intruder. But such is not the case, says a local paper, for, while we are paying the closest attention to plague, relapsing fever, measles, and a few other epidemics, we have found an opportunity of introducing a novelty possessing some striking and entirely new features. The introduction is necessarily somewhat limited, but nevertheless it is a start, and the new arrival may prove itself capable of vast things. The new visitant rejoices in the name of "chigger" and has been referred to as "jigger." Paragraphs have recently appeared in the papers reporting the arrival of a vessel with (*inter alia*) "four cases of jigger on board." These notifications have occasioned considerable mystification. Long discussions have been going on as to what "jigger" really is. At first it was put down as merchandise and very expensive at that, because four cases was not much in the way of consignment. Most people were agreed that it was something either to eat or drink, but which opinion was divided excepting that gin as an individual article held the field. We listened to all these theories as to "jigger" and then decided on making enquiries. Our search has led to the knowledge that "jigger" is not jigger but "chigger" and is nothing either to eat or to drink, nothing more than a wee modest flea. Wee it is, and modest, and therein lies all the trouble. It is none of your bumping, jumping, bounding, hilarious common or garden fleas, but a timid little thing ever trying to escape attention. In truth it is a case of "where is the lady" and having discovered her, the rest is fairly simple. But to particularise.

There are at present no less than twelve patients in the Goculdas Tojpal Hospital, suffering from this newly imported disease from British East Africa. As we have said, chigger is a very minute flea, and the disease is caused by the fertile female which burrows under the skin. Any part of the body may be attacked, but the feet are usually infested, mainly between the toes and near or under the toe nail.

The presence of the insect under the cuticle is at first marked only by a minute black spot which may be invisible without a magnifying glass, especially in a dark skin. The parasite soon enlarges to the size of a small pea by development of the egg-sac which when mature, looks like a drop of pus beneath the cuticle with the body of the flea as a black spot in its centre. If left alone the sac bursts and the eggs escape. Severe pain attends the presence of the parasite and troublesome ulceration, and even necrosis of bone may follow.

Captain P. P. Kilkelly, M.B., I.M.S., lately officiating in medical charge, 4th Bombay Infantry, when that Corps was serving in British East Africa, was the first to report in Bombay in

the early part of January last, that chigger had firmly established itself at Mombasa. The regiment left that island on December 3rd, in the steamer *C-mura*, and on December 17th, during the voyage between Aden and Bombay, 26 fresh cases of fully developed chigger were found among the men and followers. Many coolies returning in the ship were found to be affected by the parasite. Captain Kilkelly in his report added: "There is no reason to doubt the probability that this insect will establish itself in India, and I need not emphasize the great necessity of taking all possible steps to prevent its importation and if it should obtain a foothold to limit its spread."

The Surgeon-General to the Government of Bombay has drawn the attention of all Civil Surgeons and other medical officers in the Presidency to the Government resolutions regarding the measures to be taken to prevent the importation of chigger into India, and adds that it is probable that in persons coming to India from Africa with chigger the abscess will usually have burst before arrival. It is, however, important to treat promptly cases in which this has not happened in order that the chances of the flea's eggs being scattered may be diminished by breaking the egg-sack.

Correspondence.

SEGREGATION IN HINDU RITUAL.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—The following, in connection with segregation, may be interesting to your readers, and I therefore, request you to kindly find space for them in your Journal.

Mr. Sreenivasa Row, F. T. S., of Guntore, in his lecture on ancient and modern religion and science, delivered in Telugu, at the Theological High School, said that segregation is not foreign to Hindus. If a death occurs in one's family, he observes Suthakum (days of pollution), during which he and the members of his family are considered to be under pollution and are not allowed to mingle with others or visit public places, like temples, &c., for 10 days (15 among some class). After the expiry of this period he throws away the old and useless things, like earthen vessels, &c., whitewashes the house and performs punyavachanum, when the homum or holy fire is burnt, after which the house and the people are considered to be removed from the said restrictions.

If a person sees a corpse, he should take a bath without removing from his person the clothes he had on (Sachalasnanum). If one attends a funeral he should take a bath and wash his clothing before entering the town, and once more after entering the town, he should then visit, before returning home, a temple where camphor, &c., are burnt.

In some cases he should remain away from home for a night.

It was shown that the observances of Suthakum, whitewashing, punyavachanum, bathing and visiting temple were calculated to prevent the spread of the disease if the death be due to an infective disease.

The rule was made applicable to all cases of death, to obviate the necessity of discriminating deaths due to infective diseases from deaths due to other causes, and to avoid the pains which would rise if the rule applied to certain cases only.

It was shown that the visit to the temple was a sort of fumigation, as one perspires freely while there owing to the dense smoke raised by burning camphor, &c.

It will not be out of place to mention that the prohibition of giving alms from a house, where there may happen to be a case of small-pox, was evidently meant to prevent the spread of the disease through the grain doled out.

Thus many of the so called superstitious observances among Hindus have a real practical value.

J. V. RAMASWAMI NAYADU, L.M.S.,

Medical Practitioner, Madras.

OXYGEN AND PERMANGANATE OF POTASH IN THE TREATMENT OF PLAGUE.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Oxygen gas and oxygenated water, &c., being found of late to have remarkable antiseptic properties, it is to be expected that they might prove of great service in the treatment of Plague. I beg, therefore, to request those having Plague cases under them to have the following plan of treatment given a fair trial: in place of Liquor Hydrarg. Perchloride, Carbolic Acid and other antiseptics already in use.

1. Oxygen gas, to be inhaled, at frequent intervals.
2. Internal use of oxygenated water, permanganate of potash, or chlorate of potash; to be given in small doses, frequently repeated, in addition to other symptomatic treatment.
3. Buboec themselves to be injected, with permanganate of potash solution, and locally antiseptics may be applied, such as camphor phenique (composed of camphor 25 parts, crystallized carbolic acid, 9 parts, alcohol, 1 part); this mixture to be mixed with half its quantity of olive oil, and applied two or three times a day over the buboes. Dr. Seymour got very good results (as mentioned in the *Pioneer* of the 26th January 1899) by the simple application of carbolic oil, so it is hoped that the above local application, combined with the internal use of oxygen before mentioned, may act with great benefit in destroying the bacilli in the gland as well as in the blood of Plague patients.

SIMOUR STATE, NAHAN,
30th January 1899.

M. C. MUKERJI, L.M.S.

Service Notes.

ROYAL ARMY MEDICAL CORPS.

THE excellent effect of the recent warrant in increasing the popularity of this Service is already apparent. At the examination in February there were upwards of seventy candidates for twenty-four vacancies; so that for the first time for many years the examination was really competitive, in fact as well as in name.

The following is a list of successful candidates for commissions at the recent examination in London:

	Marks.		Marks.
Delap, G. G.	2,393	Murison, C. C.	2,052
Warren, P.	2,388	Ouract, H. B.	2,047
Cunningham, R. A.	2,385	Falkner, P. H.	2,043
Crawford, V. J.	2,384	Hart, H. F.	2,025
Palmer, F. J.	2,275	Winslow, L. F. F.	2,016
Challis, O.	2,360	Norman, H. H.	1,971
Simson, H.	2,316	Chopping, A.	1,935
Stokes, T. G. N.	2,282	Prescott, J. J. W.	1,930
Butler, S. G.	2,151	Elsner, C. W. A.	1,925
Irvine, G. H.	2,140	Webb, A. L. A.	1,914
Woodside, W. A.	2,133	Ellery, E. E.	1,899
Blackwell, W. R.	2,109	Nicholls, H. M.	1,846

INDIAN MEDICAL SERVICE PASS LIST.

THE following candidates for Her Majesty's Indian Medical Service were successful at the same competitive examination:

	Marks.		Marks.
Dykes, C.	3,457	Fry, A. B.	2,708
McKechnie, W. E.	3,276	Maddock, E. C. G.	2,685
Greig, E. D. W.	3,275	Tuke, A. W.	2,682
McKay, D.	3,119	Lewis, F. C.	2,574
Urwin, J. J.	3,069	Manuk, M. W.	2,552
Harvey, W. F.	3,037	Tucker, W. H.	2,432
Peile, H. D.	2,990	Lowson, C. S.	2,390
Forster, W. C. H.	2,949	Beaman, J. H. S.	2,369
Cowin, D. H. F.	2,927	Dickinson, W. H.	2,295

THE NEW BADGE OF THE R. A. M. C.

THE new badge of the Royal Army Medical Corps, which has received Royal sanction is figured in a recent issue of the *British Medical Journal* (p. 175). Its design is at once artistic and appropriate. The Aesculapian serpent on the knotted stick is encircled by laurel leaves, surmounted by a crown, and underneath is inscribed the motto: *In arduis fidelis*.

AN ANGLO-INDIAN CENTENARIAN.

SURGEON-MAJOR JOHN BOWRON, the patriarch of the Indian Medical Service, died at Hove on the 5th ultimo at the age of 100 years. He first joined the East India Company's service as a medical pupil on July 1st, 1813, and was appointed an Assistant Surgeon on the Bengal Medical Establishment on December 20th, 1825. After holding medical charge of several regiments in succession, he became Civil Surgeon of the important station of Jessore in Bengal, subsequently returning to military duty until the date of his retirement from the service on December 31st, 1851, with the rank of Surgeon-Major, after thirty-eight years

service. This stalwart servant of old John Company was throughout his long service a zealous and conscientious officer, and in his own person proved that with care a European can undergo a prolonged period of continued service in the plains of India without damage to the constitution.

DEPUTY-SURGEON-GENERAL HENRY R. L. MACDOUGALL, M.D., late of the Bombay Establishment, died at Oban on February 9th in his 64th year. He was a son of the late Vice-Admiral Sir John MacDougall, K.C.B., and entered the service as Assistant Surgeon, May 28th, 1858; he became Brigade-Surgeon, May 1st, 1883, and retired with the honorary rank of Deputy-Surgeon-General, May 20th, 1886. He was engaged in the China War of 1860, and was present at the capture of the Taku Forts (medal with clasp.)

SIR GEORGE BIRDWOOD has retired from the India Office after a service period of more than forty years. He is best known for his extensive knowledge of the arts and crafts of India and for his organisation of various exhibitions, and we are glad to say that, although he has retired, the country will have the benefit of his services with regard to the forthcoming exhibition at Paris to be held next year. Sir George Birdwood is an M.D. of Edinburgh and has held important medical and scientific professorships at the Grant Medical College, Bombay.

THE Secretary for War has announced, in the memorandum of his Army Estimates, that 18 additional officers of the Royal Medical Corps will be shortly required to supply the needs of the additional 30,000 men whom he proposes to add to the Army.

CAPTAIN LEUMANN and LIEUTENANT J. S. STEVENSON, Indian Medical Service, go on plague duty to Natal and Mauritius respectively. Both officers have had considerable experience of plague in India.

Obituary.

FRANCIS NOTTIDGE MACNAMARA, M.D.,

LATE PROFESSOR OF CHEMISTRY, MEDICAL COLLEGE, CALCUTTA.

DR. FRANCIS NOTTIDGE MACNAMARA, after passing through a distinguished career at King's College, entered the East Indian Medical Service in the year 1853. He was appointed Professor of Chemistry at Calcutta, and Chemical Examiner to the Government of India, and continued to hold this appointment until the year 1870, when he left India. On his return to England he was appointed Chemical Examiner to the Indian Government, and held this post down to the time of his death. Throughout this long service Dr. Macnamara did a vast amount of work of a highly technical and scientific kind. It is difficult for those unacquainted with the climate of Calcutta to realise the nature of his employment,—day after day, and year after year, working in a close, badly-ventilated laboratory, in which the most delicate chemical analyses had to be carried on. Among other duties it was his business to report on the contents of the stomach and other organs which were sent to him from all parts of Bengal in suspected cases of poisoning, a method of disposing of inconvenient persons by no means uncommon among the natives of India. Specimens of gunpowder and other explosives used by the military authorities in Bengal were referred to him for analysis. Beyond this he had to give a full course of lectures every year on chemistry to the large class of medical students attending the Calcutta College and University. His work on the *Climate and Medical Topography in their relation to the Disease Distribution of the Himalayan and Sub-Himalayan Districts of British India* is well known, and he was a frequent contributor to our pages.

Dr. Macnamara was persuaded many years ago of the danger of using water contaminated with various impurities, and at a time when the sanitary advisers to

the Government of India scouted the idea that cholera and other diseases were disseminated by means of a specific poison in drinking water which caused these diseases, he strove to impress on the Government correct views on this subject. He did much towards initiating and perfecting the scheme by which Calcutta has been supplied for many years with pure water, and thus helped largely to reduce the death-rate from cholera in the metropolis and throughout the cantonments of India.

ROBERT PRINGLE, M.D.,

BRIGADE-SURGEON-LIEUTENANT-COLONEL, I.M.S.

COLONEL PRINGLE, who died at Blackheath on 13th January, was one of the few survivors of the Cawnpore Massacre, all his brother officers being killed, but he escaped through being called off to attend the wounded elsewhere. He retired on pension in 1883, and has since been engaged in local and philanthropic work in the neighbourhood in which he resided. He was the son of an Indian officer and was educated in Edinburgh, where he graduated in 1854. He entered the Bengal Medical Service, in which he served thirty years, until his retirement in 1884. The greater part of his Indian service was spent in civil employ in the Sanitary Department of the North-West Provinces. He gained a wide experience in the various departments of public health, especially of vaccination. The knowledge he thus acquired found expression in numerous articles which he contributed to various periodical publications, among which may be mentioned, *Ancient and Modern Methods of Treating Small-pox in India*, *Vaccination n. Isolation*, *What is Efficient Vaccination?* *On Enteric Fever and Bubonic Plague in India*, *Storage of Rain Water for Drinking*, *Quarantine*, on *Cholera*, etc.

LEWIS STANHOPE BRUCE,

SURGEON-GENERAL, I.M.S.

SURGEON-GENERAL BRUCE died at Ealing on January 2nd in his 68th year. He was the second son of the late Lieutenant-Colonel Louis Bruce, who fell at the battle of Ferozeshah on December 21st, 1845. Surgeon-General Bruce joined the Indian Medical Service (Bombay Establishment) on May 6th, 1854, became Surgeon-Major July 1st, 1873; Brigade-Surgeon, November 27th, 1879; Deputy Surgeon-General (Bombay Presidency), September 15th, 1882, and retired on September 15th, 1887, with the honorary rank of Surgeon-General. He served in the Indian Navy in 1856-57 in Persia, landing at Halliliah Bay, and being present at the bombardment and surrender of Bushire, and with the 3rd Regiment Bombay Light Cavalry in the expedition to Borazjoon, being present at the battle of Kooshab. For these services he received the medal with clasp. During the Indian Mutiny he served with the 3rd Bombay Light Cavalry in the Central India Campaign of 1858, taking part in the pursuit of Tantia Toppe and of the enemy from Rajghur, which resulted in the capture of twenty-seven guns. He was also present at the battle of Sindwahoe and the skirmish at Kural, receiving the medal. In the Afghan War of 1880 he acted as principal medical officer of the 2nd Division of the Candahar Field Force, and subsequently of the South Afghanistan Force, taking part in the march to the relief of Candahar with the force under Major-General Phayre.

F. C. CHATTERJEE, M.B.,

LIEUT.-COLONEL, I.M.S.

LIEUTENANT-COLONEL F. C. CHATTERJEE, M.B. Bengal Establishment, died at Azimghur, India, on September 11th, 1898. He joined the department, October 1st, 1877, and became Surgeon-Lieutenant-Colonel, October 1st, 1897. He was with the Burmese Expedition in 1886-87, and had the Indian Frontier medal with clasp.

WILLIAM PEARL,

SURGEON-GENERAL.

SURGEON-GENERAL WILLIAM PEARL, late of the Madras Establishment, died in London on January 10th, aged 66, after a very short illness. He was appointed Assistant-Surgeon, January 24th, 1855, and became Deputy Surgeon-General, August 15th, 1881. He retired from the service with the honorary rank of Surgeon-General, March 18th, 1885.

DUNCAN MACRAE,

DEPUTY INSPECTOR-GENERAL, RETIRED LIST, I.M.S.

DEPUTY-INSPECTOR-GENERAL DUNCAN MACRAE Retired List, Indian Medical Service, died at Kamer Castle, Isle of Bute, on the 14th instant, at the age of 82. He joined the East India Company's service in January, 1838, and served through the Afghan War of 1842, under General Pollock. He was present at the capture of Khythul in 1843, went through the campaign in Sind in 1846, and the campaign in the Punjab in 1848-9, including the Siege of Mooltan and the Battle of Goojrat. He also served through the Indian Mutiny in 1857-8, and was present at Umballa, Meerut, and the capture of Delhi. He had received three medals and three clasps.

Gazette Notifications.GOVT. OF INDIA
MILITARY.

Surgeon-General W. S. M. PRICE, Army Medical Staff, to officiate as Principal Medical Officer, Bombay Command, with effect from 8th February 1899, *vice* Surgeon-General A. F. CHURCHILL, appointed Officiating Principal Medical Officer, Her Majesty's Forces in India.

Lieutenant-Colonel W. J. CHARLTON, Royal Army Medical Corps, to officiate on the Administrative Medical Staff of the Army with the temporary rank of Colonel, *vice* Colonel E. Townshend, C.B., Royal Army Medical Corps, granted leave out of India, dated 11th February 1899.

The following officers of the Royal Army Medical Corps have been placed under orders for India for a tour of duty, and are posted to the commands mentioned: To Bombay—Majors Corkery and Hall, Lieutenant Martin. To Madras—Major Crofts and Lieutenant Cowan.

To "Watts, and to Bengal—Lieutenant Malaprice. To "Sov, Indian Medical Service, is appointed

Principal Medical Officer of the Tochi Force, *vice* Lieutenant-Colonel BOOKRY, I.M.S., granted leave out of India.

Lieutenant-Colonel PALMER, Indian Medical Service, is about to be relieved of his appointment as Principal Medical Officer, with the Tochi Force, on account of ill-health.

CIVIL.

Lieutenant-Colonel JOHN SCULLY, Indian Medical Service, Bengal, having resigned his appointment as Assay Master, Calcutta Mint, with the intention of retiring from the service, his services are replaced at the disposal of the Military Department with effect from the 8th April 1899.

Captain J. L. T. JONES, Indian Medical Service, Bombay, is appointed temporarily to officiate as Assay Master, Calcutta Mint.

Lieutenant R. W. ARTHUR, I.M.S., 9th Bombay Infantry, has been appointed to be Residency Surgeon at Baroda.

Lieutenant-Colonel Sir G. S. ROBERTSON, K.C.S.I., Indian Medical Service (Bengal), Political Officer with Sardar Ayub Khan, is granted special leave for six months.

BOMBAY.

Lieutenant-Colonel J. P. GREASY, I. M. S., to be Civil Surgeon, Poona, *vice* Lieutenant-Colonel W. McCONAGHY, I.M.S.

Lieutenant-Colonel C. T. PETERS, I.M.S., to be Civil Surgeon, Belgium, *vice* Lieutenant-Colonel J. P. GREASY.

Captain J. B. SMITH, I.M.S., to be Civil Surgeon, Bijapore, continuing to act as Assistant Civil Surgeon and Civil Surgeon, Poona, pending further orders.

Captain J. B. SMITH, I.M.S., is allowed furlough on medical certificate for twelve months.

Dr. Miss ALICE M. CORTHOEN, to act as First Physician, Pestnaji Hormasji Kanna Hospital for Women and Children, Bombay, during the absence on leave of Miss A. M. BENSON, M.D., or pending further orders.

Captain A. J. HEATH, I.M.S., Assistant-Surgeon to the David Sassoon Hospital, and Assistant to the Civil Surgeon, Poona, has been allowed by Her Majesty's Secretary of State for India an extension of leave on medical certificate for six months.

PANJAB.

Captain G. F. W. EWENS, I.M.S., Civil Surgeon, and Superintendent of the Central Jail, Montgomery, resumed charge of his duties at Montgomery on the afternoon of the 21st of February 1899, relieving Captain G. N. C. HUSTON, I.M.S. Officiating Civil Surgeon.

BURMA.

Captain F. J. DEWEES, I. M. S., has taken over charge from Lieutenant-Colonel THOMAS of the duties of Civil Surgeon, Superintendent of the General Hospital, and Port Health Officer, Rangoon.

N.-W. PROVINCES.

Captain W. YOUNG, M.B., C.M., I.M.S. (Bengal), is placed permanently at the disposal of the Government of the North-Western Provinces and Oudh.

BENGAL.

Captain D. M. MOIR, I. M. S., has been granted an extension of furlough for nine months.

Senior Assistant Surgeon and Honorary Lieutenant W. A. WILLIAMS, Officiating Civil Medical Officer of Balasore, is allowed privilege leave for three months.

Assistant Surgeon MAX MOHAN GUPTA is appointed temporarily to have medical charge of the civil station of Balasore.

THERAPEUTIC NOTES.**Intestinal Atony:**

R Sodii benzoatis	..	..	..	..	gr. lxxv
Pulv. rhei	..	..	..	..	gr. lxxv
Pulv. nuc. vom	..	..	..	..	gr. ss
M. Et divide in cachets No. 10. Sig. Two to three a day.					

Facial Erysipelas:

R Acidi carbol.	}	..	..	..	dr. ii
Tinc. iodini		..	..	..
Alcohol		..	..	..
Ol. tereb.	..	..	..	..	dr. s
Glycerini	..	..	..	..	oz. i
M. Sig. Paint every two hours and cover with an aseptic gauze.					

Whooping Cough.—J. MADISON TAYLOR² finds the following, when administered to a child every three hours, of great value in pertussis:

R Antipyrine	..	..	..	gr. ss. to i.
Ammon. chlor	..	..	..	gr. liiss to gr. v.
Syr. limonis	..	..	..	dr. ss.
Aquamad	..	..	..	dr. i M

or

R Antipyrine	..	..	..	gr. ss to ii.
Ammon. brom.	..	..	..	gr. i to ii.
Ammon. mel.	..	..	..	gr. v.
Syr. simpl. ad	..	..	..	dr. i. M.

¹ Huchard, Gazette des Hôpitaux, 123, 1898, through N.Y. Med. Journal.

² Canadian Practitioner, June; Münch. med. Woch., 38, 1898.

³ The Practitioner, November, 1888.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, The Indian Medical Gazette, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the Indian Medical Gazette Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

Year Book of Medicine and Surgery: Edited by Gould. Philadelphia W. B. Saunders.

Modern Surgery by Da Costa: Philadelphia, W. B. Saunders.

General Physiology by F. S. Lee: London, MacMillan & Co.

Administration Reports of Bengal and Punjab for 1897-98.

Annual Report of The Comtee of Dufferin's Fund for 1898.

Notes on Surgery for Nurses by Bell: Edinburgh, Oliver and Boyd.

COMMUNICATIONS RECEIVED FROM:—

Lieutenant-Colonel Henderson, Bombay; Major Maynard, Hazaribagh; Major J. J. Pratt, Nain; L.M.S., Bombay; Dr. C. Banks, Calcutt; Assistant Surgeon Kali Mohan Sen, C. P.; Colonel Joubert, Calcutt; Captain W. J. Buchanan, Bhagapur; Assistant Surgeon M. C. Mukerji, L.M.S., Nahan; Captain L. Rogers, Muktesari; Kumaon, N. W. P.; and Colonel K. McLeod, London.

Original Articles.

A CASE OF HYPERTROPHY OF THE TOES.

BY
J. MAITLAND, M.D., F.R.C.S.,

LT.-COLONEL, I.M.S., MADRAS.

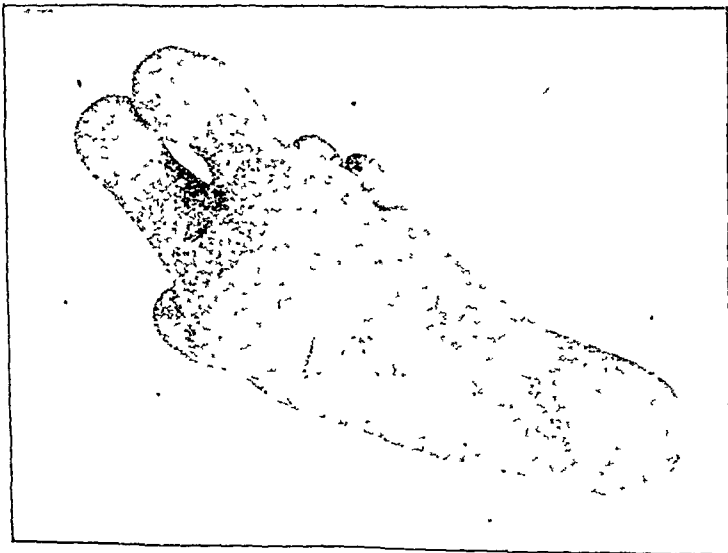
THE patient was a Hindoo, 22 years of age.
Description of the deformity.—The bones of

the second and third toes of the left foot are very much enlarged. Each toe measures three inches in length and two and a half inches in circumference. The terminal phalanges are slightly curved towards one another, giving the part a claw-like appearance. The metatarsal bones are enlarged proportionately to the increase in size of the phalanges. The soft tissues in the plantar surface of the enlarged metatarsal bones are much thickened, forming a large pad which almost obscures the other toes when the foot is viewed from its under surface. The remaining toes of the deformed foot are considerably smaller than those of the normal foot. This diminution in size is most marked in the case of the big toe and the fourth toe.

The patient was desirous that the enlarged toes might be removed in order that he might wear a boot. Amputation was performed at the metatarsophalangeal joints.



(a) Side-view.



(b) Plantar view

RELAPSING FEVER (SUNJAR) IN THE KUMAON HIMALAYAS.

BY
LEONARD ROGERS, M.D., M.R.C.P., B.S.,
F.R.C.S.,
CAPTAIN, I.M.S.,

*Officiating Imperial Bacteriologist to the
Government of India.*

AS I recently had an opportunity of investigating an outbreak of relapsing fever some 60 miles from the Muktesar Laboratory in the Kumaon Hills which had been reported as an outbreak of "sunjar," which is thought by some to be a mild form of plague, a brief record of the facts observed may be worthy of being placed on record. The disease was greatly on the decline at the time of my visit, which was a flying one on account of other important work, and the following details are taken from my notes which were made on the spot.

On my arrival at the scene of the outbreak, I was informed that the epidemic had nearly died out, but a number of patients who had recently recovered were collected for my inspection, and a careful questioning of them elicited the following facts. In the village of

Suwal, which is situated not far from Champawat in the south-east of the Almora district, the first person to be attacked was a woman aged 40 who had not recently left the village, and she died on the seventh day of her attack of fever. Seven days after this woman fell ill, a man, who lived in the next house, which was built side by side with the first one and in contact with it, was attacked by fever and within the next few days the whole of his family, consisting of a wife and five children, between the ages of 4 and 13, also got it. The fever lasted in these cases from eight to ten days, and then after an interval of four or five days of freedom from fever, it recurred and lasted from four to seven days. It is not necessary to follow in detail all the cases, but it will suffice to mention that in ten other cases the average duration of the first attack of fever was 7·7 days, of the interval of freedom from fever was 6·1 days, while the relapse averaged six days, figures which correspond closely with those of the classical descriptions of relapsing fever, while the extremes met with in the whole of the cases were within those given by Fagge for this disease. The other symptoms met with may be briefly summarised as being a sudden onset of fever accompanied by headache and pain in the back and limbs, loss of appetite, and often diarrhoea shortly before the cessation of the fever in either the first or second attack. In the interval there was an entire absence of fever, but considerable weakness and inability to do any work remained. The recurrence of the fever was also sudden, but the second attack did not usually last quite as long as the first one, and in no case did a third attack occur. After the fever finally ceased the patients only slowly recovered their strength, being unfit to do any hard manual labour for two or three months, another characteristic of relapsing fever. There were no other fatal cases among the few villages that I was able to investigate, but several fatal cases had been reported in other villages affected, which I was unable to visit, and which extended over an area of about 20 miles, and other cases beyond these limits have since been reported.

With regard to the infectiousness of the disease the following figures are interesting and conclusive. In six households attacked, of which I have the figures, there were thirty persons. As soon as the first case occurred in three of these houses containing twenty persons, twelve of the occupants were removed to other houses and all of them escaped the disease. Of the sixteen persons who remained in the affected houses fourteen got the fever and only two escaped. The incubation period varied from one to ten days after exposure to the chance of infection. All these facts again are typical of relapsing fever.

Finally, only one patient had not had a relapse at the time of my visit, and on examining him

closely he appeared to have a little fever. The thermometer revealed a temperature of 100·2, and on examining his blood the spirillum of relapsing fever was found in small numbers, two being present in a field of an oil emersion lens in one specimen, while single ones could be easily found in a short time in every specimen examined. Inoculations of agar and gelatine tubes gave negative results, which is in accordance with the fact that this organism has not yet been cultivated outside the body. No monkeys were available for inoculation, so no further observations could be made on the organism. The proof of this outbreak being one of true relapsing or famine fever was then complete, and on inquiry it was found that these people were well off and had not suffered at all from privation.

I mentioned at the commencement of this note that the above described outbreak was called "Sunjar" by the natives of these parts, and a few remarks on the question of what are "Mahamari" and "Sunjar" may be appropriate in this place. From inquiries that I have recently made in the Kumaon hills it appears that the former term is applied in these parts to any epidemic disease which is attended by a very high mortality, and under this name I have had a typical outbreak of cholera described to me by villagers. On the other hand, any infectious disease which is attended by a comparatively low mortality is called "Sunjar," which term would probably include such diseases as measles and chicken-pox, etc., if they occur in these parts.

From an examination of the records, it appears to be certain that some of the outbreaks of so-called "Mahamari" are exactly similar to true plague, notable those of 53-54, which spread down to the districts of Bijnor and Moradabad, and of 1876-77. It is, however, equally certain that this form of the disease may be absent from the hills for several years at a time, as for instance between the years 1878 to 1881 when, although the whole of the villages of Kumaon and Garhwal was carefully inspected yearly and a special report made, no cases of this disease were found. Further, it seems very likely from the descriptions that some of the outbreaks that have been returned as "Mahamari" have been outbreaks of typhus fever and not of plague, and that the latter are comparatively rare. Again, the outbreaks of the plague-like disease nearly always begin in the higher parts of the district, which border on Tibet, and it seems very probable that they originate in that country, which together with Yunan appears to be the home of the plague, from whence it spread to Canton and Hong-Kong in 1893, and that it is more likely that the plague reached Bombay in that roundabout way than that it travelled direct from Garhwal to the Western part of India.

A SERIES OF CASES OF COMPOUND DEPRESSED FRACTURE OF THE SKULL.

By C. C. S. BARRY,
CAPTAIN, I.M.S.

THE following cases were all treated in the Rangoon General Hospital during the last two years, and were, with two exceptions, entirely under the care of Capt. C. Duer, F.R.C.S., and myself.

A perusal of the above cases will show that the injuries to the skull varied greatly in severity, but there was no case in which the injury was not of a grave nature.

Out of these twenty-six cases, seventeen recovered and nine died, the percentage of recoveries being 65.4 and of the deaths 34.6. Out of these nine cases that died, the injuries in two (cases 12 and 22) were so severe, as almost to preclude any chance of recovery. They were the result of murderous attacks, and the injury to the skull was the result of repeated blows with a club. In case (4), death was due to septic pneumonia and cerebral abscess, in case (19) to brain injury plus shock, and cases (1), (2), (6) and (7) to meningitis.

Of the recoveries, cases (10), (11) and (13) were the most remarkable. In cases (21) and (23), the injury to the skull and brain was complicated by the presence of a large blood-clot between the dura mater and the skull.

The cases were brought to hospital at varying periods of time after the receipt of the injuries, but mostly after the lapse of a few hours; and it is worthy of note that brain symptoms were, as a rule, very slight on admission of the patient, though as above mentioned, the injuries were all severe. Thus, in fifteen cases, there were no symptoms of brain injury at all, and in two cases (8) and (25), the symptoms complained of were comparatively slight. In nine cases, definite symptoms of injury to the brain were present. Of the fifteen cases presenting no symptoms of brain injury, five died or 33.3 per cent., and ten or 66.6 per cent. recovered. Of the eleven cases showing brain symptoms, five died or forty-five per cent. and six recovered or fifty-four per cent. The mortality, therefore, in cases presenting brain symptoms, was, as might have been expected, considerably the higher.

In ten cases the injury was situated on the forehead, that is to say, the part of the frontal bone uncovered by the hairy scalp; of these cases eight recovered and two died or recoveries eighty per cent., deaths twenty per cent. In this set of cases, therefore, an injury to this portion of the skull appeared to be less formidable than when situated elsewhere.

In sixteen cases the dura mater at the time of operation was intact; in eight cases it was torn or

lacerated; in two cases (Nos. 15 and 20) the vault of the skull was not opened. Of the sixteen cases in which dura mater was intact, 68.8 per cent. recovered, and 31.2 per cent. died. Of the eight cases in which it was lacerated fifty per cent. recovered and fifty per cent. died. The fact therefore of the dura mater being intact may be taken as a hopeful sign in making a prognosis. As regards the method of operating, the object aimed at was very free exposure of the site of the injury to the skull bones, and afterwards by free removal of the injured, and if necessary, of the sound bone, as complete a knowledge as possible of the injury to the inner table of the skull and to the brain substance.

With this end in view, the site of the fracture was first freely exposed, and then all depressed bone elevated and removed, an examination of the resulting hole in the skull was made, and a bent probe then passed round the edges of the hole in search for any depressed inner table. The removed portions of bone were, as far as possible, pieced together, and if any portion of the inner table was missing, another search was made.

The inner table was frequently found to be depressed and fractured in a manner out of all proportion to the injury sustained by the external table of the skull. Where depression of the inner table was discovered beneath the sound skull, the latter was cut away till the depressed bone could be elevated and, if necessary, removed.

If a well-marked fracture of the skull was found radiating from the site of the depressed fracture, the skull was cut away along the line of fracture with Hoffman's bone cutting forceps, so as to thoroughly explore the condition of the inner table immediately beneath the line of fracture.

By doing this in several cases, small portions of inner table were found lying detached and free between the dura mater and the skull, and were removed, and in one case No. 9, a sharp specula of inner table was found driven vertically through the dura mater downwards into the brain substance.

From these cases, and from the *post-mortem* examination of the skulls of some patients killed by sword cuts, and also as the results of some experiments by myself, I have come to the conclusion that whenever the outer table of the skull is cut through by a sword or *dah* cut given at right angles to the curvature of the skull, some well-marked depression and fracture of the inner table is to be expected, and it is safer to trephine the patient, and thoroughly explore the condition of the bone inside the skull.

The consequence of the abovementioned method of operating was that, in many cases, a considerable hole was left in the bony vault of the skull, but in no case did any patient apparently suffer any inconvenience on this account.

It is with natives exceedingly difficult to follow the progress of cases after they have once left the hospital, but I have seen two cases Nos. (8) and (11) one year after the operation, and in both these the scar had remained depressed, and the hole in the skull was apparently filled in with fibrous tissue. In two cases only in my knowledge has the bone of the skull been replaced. In one, the crown of bone removed by the trephine was replaced whole and had afterwards to be removed, as it acted like a foreign body and kept up suppuration; in the other (in a patient who died of lung disease,) the patient had been

trephined some years before, and the bone replaced in bits. In this latter case, only a few portions of bone had remained unabsorbed, and those that remained were so thin and fragile that they could have afforded no protection to external violence. In two cases Nos. (11) and (13), hernia cerebri resulted as a result of the operation and injury; both cases recovered. The herniæ were subjected to elastic pressure with gauze and wool, and in both cases they gradually dwindled away, and the patients left hospital with a firmly healed and depressed cicatrix.

No.	Caste.	Sex.	Age.	INJURY.	When seen after receipt of injury.	Stay in hospital.	RESULTS.
1	B.	M.	29	Compound depressed fracture, 2 inches long, $\frac{3}{4}$ inch broad, of right frontal bone running downwards and outwards to outer extremity of right eyebrow. Loss of brain substance. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Depressed bone elevated and removed; cerebral irritation; paralysis of left leg and arm. <i>P.M.</i> —Bruising and laceration of whole right side of brain.	12 hrs.	3 days	Died.
2	B.	M.	45	Compound depressed fracture, $1\frac{1}{2}$ inches long, $\frac{1}{2}$ inch broad, of frontal bone, slightly to right side median line. Dura mater intact. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Depressed bone elevated and removed 5th day. Temperature 102° , paralysis of left leg and arm. Wound opened up. Dura mater given way, trephined over centre for left leg; much purulent fluid evacuated; death two hours later.	4 hrs.	5 days	Died.
3	B.	M.	30	Compound depressed fracture, 1 inch long, $\frac{1}{2}$ inch broad, vertically over left eyebrow. <i>Symptoms.</i> —High temperature, noisy, restless, no paralysis. <i>History.</i> —Depressed bone elevated and removed; seven days noisy, troublesome, gradually completely recovered, never any paralysis.	4 days	54 days	Recovered.
4	H.	M.	22	Compound depressed fracture, 1 inch square, just above and behind left ear. Dura mater intact; blow with club. <i>Symptoms.</i> —Semi-conscious, restless, no paralysis. <i>History.</i> —Depressed bone elevated and removed; free hæmorrhage controlled with gauze plugging; wound healed by first intention; persistent high temperature; septic pneumonia; death. <i>P.M.</i> —Septic pneumonia both lungs, abscess of brain near seat of injury (temporo-sphenoidal lobe).	2 hours	17 days	Died.
5	B.	M.	34	Compound depressed fracture, $\frac{1}{2}$ inch long, $\frac{3}{4}$ inch broad, about $\frac{3}{4}$ inch above left eyebrow; wound suppurating. Dura mater intact; blow with iron rod. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Depressed bone elevated and removed; left hospital at own request; eleven days later wound firmly healed. Recovery apparently complete.	4 days	11 days	Recovered.
6	H.	M.	25	Compound depressed fracture, 2 inches long, $2\frac{1}{4}$ inches wide, over ant.-inferior angle of right parietal bone; fragments driven deeply into brain; much loss of brain substance fall into ship's hold. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Depressed bone elevated and removed, and fragments extracted from brain; brain substance washed away; meningitis; prolonged high temperature; paralysis of left arm and leg. <i>P.M.</i> —Septic pneumonia both lungs, whole of right hemisphere of brain much disorganised.	5 hrs.	33 days	Died.
7	B.	M.	22	Compound depressed fracture, 2 inches long, 2 inches broad, over lower half of middle and posterior thirds of left parietal bone. Dura mater intact; blow with an axe. <i>History.</i> —Depressed bone elevated and removed; troublesome hæmorrhage; gauze packing. Normal temperature five days; wound healed; then temperature 101° ; meningitis; pareses of right arm and leg; wound opened up, general meningitis. <i>P.M.</i> —Purulent meningitis of both hemispheres of brain.	24 hrs.	17 days	Died.
8	B.	M.	27	Compound depressed fracture, $\frac{3}{4}$ inch \times 1 inch over inner third of left eyebrow. Dura mater intact; wound suppurating <i>dah</i> . <i>Symptoms.</i> —Rational, no paralysis, severe headache; temperature 100° . <i>History.</i> —Depressed bone elevated and removed, edges of scalp wound pared; temperature at once fell to normal; complete recovery.	3 days	22 days	Recovered.
9	B.	M.	23	<i>Dah</i> cut skull, about 5 inches long, middle $\frac{1}{2}$ of cut depressed; specula of inner table driven into brain substance; escape of a little brain substance. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Depressed bone elevated and removed, severe headache for a few days; complete recovery.	2 hrs.	33 days	Recovered.

No.	Case.	Sex.	Age.	INJURY.	When seen after receipt of injury.	Stay in hospital.	RESULTS.
10	H. M.	20	Compound depressed fracture, 2 inches long, $\frac{1}{2}$ inch broad, right side of head over fissure of Rolando. Dura mater punctured in two places by specula of bone; wound suppurating due to a fall. <i>Symptoms.</i> —Paralysis of left arm rational. <i>History.</i> —Depressed bone elevated and removed; second day paralysis of left leg; fourth day incontinence of feces, retention of urine. In this condition ten days, with high temperature; slow recovery of power over sphincters, then over left leg. Left hospital at own request with pareses of left hand.	6 days	86 days	Recovered.	
11	B. M.	34	Compound depressed fracture, $1\frac{1}{2}$ inch \times $1\frac{1}{2}$ inch over ant.-superior angle of right parietal bone; considerable loss of brain substance; blow with hammer. <i>Symptoms.</i> —Rational paresis of left arm and leg. <i>History.</i> —Depressed bone elevated and removed; brain substance washed away; paralysis of whole of left side; hernia cerebri gradual; recovery of power first over left leg; wound healed firmly; left with pareses of left hand.	9 hours	58 days	Recovered.	
12	H. M.	38	Compound depressed fracture, 3 inch \times 1 inch over vertex of skull; blow with club. Dura mater intact. <i>Symptoms.</i> —Semi-conscious, noisy, restless. <i>History.</i> —Bone elevated and removed; quieter though never quite conscious; no paralysis.	1 hour	1 day	Died.	
13	B. M.	10	Compound depressed fracture, $1\frac{1}{2}$ inch \times 1 inch over anterior portion of right parietal bone. Dura mater intact; blow with club. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Bone elevated and removed; did well for eight days, then left-sided convulsions; high temperature; wound open up. Dura mater incised. Pus evacuated; meningitis, hernia, cerebri convulsions continued till 13th day; wound healed; complete recovery.	12 hours	53 days	Recovered.	
14	B. M.	30	Semi-circular cut with <i>dah</i> on vertex of skull 6 inches long, anterior portion comminuted and depressed. Dura mater intact. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Depressed bone elevated and removed; wound healed by intention; complete recovery.	12 hours	24 days	Recovered.	
15	B. M.	19	Compound depressed fracture, $\frac{3}{4}$ inch \times 1 inch just above middle of right eyebrow; bone depressed into a large frontal, sinus roof of which formed by floor of vault of skull, floor formed by roof of orbit, fractured; wound suppurating <i>dah</i> cut. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Bone elevated and removed; no head symptoms; complete recovery.	24 hours	18 days	Recovered.	
16	M. M.	45	Compound depressed fracture, circular in shape, about $\frac{1}{2}$ inch in diameter, situated on vertex of skull slightly to right of sagittal suture and posterior to region of fissure of Rolando caused by a trick weighing 6lbs., falling through 12 feet. Dura mater intact. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Trephined at margin of depression, depressed bone elevated and removed; inner table much comminuted. A very large quantity of it was fished out from under the sound skull; excellent recovery; no head symptoms.	3 hours	12 days	Recovered.	
17	M. M.	20	Compound depressed fracture stellate in form, situated on lower side of head, just in front of the position of middle $\frac{3}{4}$ of fissure of Rolando. A piece of skull and scalp was driven in towards under sound skull. Dura mater torn; brain substance lacerated, caused by a blow with a pointed bamboo. <i>History.</i> —Depressed bone elevated and removed; much comminution of inner table; did well for five days, then rise of temperature, loss of consciousness, general convulsions; wound opened up, brain bulged into wound, but did not pulsate; a small abscess found in brain substance beneath the wound, about one drachm of pus, drainage-tube inserted, convulsions ceased, consciousness returned, temperature normal; 7th day loss of speech otherwise well; 19th day unconscious, rise of temperature, paralysis of right arm and leg; wound healed. Wound opened up, brain explored, nothing abnormal found, 20th day died. P.-M.—Extensive red softening of left motor areas and left internal capsule.	1 hour	20 days	Died.	
18	B. M.	22	Compound depressed fracture, circular in form, about 1 inch in diameter, situated $\frac{3}{4}$ inch above inner third of right eyebrow, bone deeply depressed. Dura mater intact; wound suppurating, caused by a blow with an iron rod. <i>Symptoms.</i> —Rational, no paralysis. <i>History.</i> —Depressed bone elevated and removed; some sound skull cut away to remove a piece of inner table which had been driven downwards under sound skull; excellent recovery; wound healed by granulation.	2 days	28 days	Recovered.	
19	B. F.	45	Compound depressed fracture, circular in form, about $\frac{3}{4}$ inch in diameter, situated on vertex of skull, about $\frac{1}{2}$ to left of sagittal suture, and 1 inch posterior to coronal suture; bone deeply depressed. Dura mater intact, caused by a blow received from the fall of a house. <i>Symptoms.</i> —Unconscious, noisy, restless, no marked paralysis.	4 hours	48 hours	Died.	

No.	Caste.	Sex.	Age.	INJURY.	When seen after receipt of injury.	Stay in hospital.	RESULTS.
				<p><i>History.</i>—Depressed bone elevated and removed; much depression and bruising of brain; brain did not expand well. Temperature rose to 105°; no recovery of consciousness, restless and noisy; death in forty-eight hours. <i>P.-M.</i>—Much local bruising of brain, no meningitis.</p>			
20	B.	Ch.	1	Compound depressed fracture, linear, about 3½ inches long, situated on vertex of skull transversely. There was linear depression of skull, but no splintering of bone caused by <i>dah</i> cut.	3 days	11 days	Recovered.
				<p><i>Symptoms.</i>—Rational, no paralysis.</p>			
				<p><i>History.</i>—Wound dressed, child quickly recovered, never showed any signs of brain injury.</p>			
21	B. M.		32	Compound depressed fracture, semi-circular in shape, the diameter being about 1 inch long, situated over anterior inferior angle of left parietal bone. Dura mater intact, caused by a blow with an iron rod.	4 hours	31 days	Recovered.
				<p><i>Symptoms.</i>—Cannot answer question, no paralysis.</p>			
				<p><i>History.</i>—Depressed bone elevated and removed; on removal of bone blood oozed freely from resulting hole in skull, and large clot was formed between dura mater and skull. The hole in skull was enlarged with bone cutting forceps and about 3 oz. of blood clot was removed. Hemorrhage continued from anterior branch of middle meningeal artery which was ligatured with difficulty; made good recovery, consciousness rapidly returned.</p>			
22	C. M.		25	Compound depressed fracture, about 2½ inches long, 2 inches wide, along vertex of skull. Dura mater lacerated, caused by blow with a club.	.....	3 hrs.	Died.
				<p><i>Symptoms.</i>—Unconscious; complete paralysis of limbs.</p>			
				<p><i>History.</i>—Depressed bone elevated and removed; large clot removed from between dura mater and skull. Furious hemorrhage from longitudinal sinus controlled by gauze plugging. Transfusion with saline solution. Died on operating table.</p>			
				<p><i>P.-M.</i>—Much laceration of vertex of brain.</p>			
23	M. M.		48	Compound depressed fracture, about 1 inch long, ½ inch wide, situated in right fronto-temporal region, just below anterior third of temporal ridge. Dura mater lacerated, caused by a blow with an unknown weapon.	3 hours	23 days	Recovered.
				<p><i>Symptoms.</i>—Cannot answer questions, no paralysis.</p>			
				<p><i>History.</i>—Depressed bone elevated and removed; large clot found between dura mater and skull; hole in skull, enlarged, and all clot removed; there was a good deal of venous hemorrhage necessitating frequent change of dressing for twenty-four hours; gauze removed in thirty-six hours; complete recovery of consciousness in forty-eight hours; uninterrupted recovery.</p>			
24	C. F.		23	Compound depressed fracture, stellate about 1 inch above inner third of right eyebrow depression, circular bone deeply depressed, about ½ inch in diameter. Dura mater intact, caused by a fall from a carriage.	8 hours	13 days	Recovered.
				<p><i>Symptoms.</i>—Rational; no paralysis.</p>			
				<p><i>History.</i>—Depressed bone elevated and removed; much comminution of inner table; made a rapid and complete recovery</p>			
25	H. M.		8	Compound depressed fracture, linear about 1 inch long, situated at junction of hairy scalp and forehead, 1 inch to left of middle line. Dura mater intact, caused by a fall.	1 hour	15 days	Recovered.
				<p><i>Symptoms.</i>—Rational; no paralysis; vomiting.</p>			
				<p><i>History.</i>—Trephined depressed bone elevated and removed; 1st day pain in wound, rise of temperature, loss of consciousness, wound opened up, and a little pus let out from between dura mater and skull; fall of temperature; return of consciousness; excellent recovery; wound healed by granulation.</p>			
26	M. M.		30	Compound depressed fracture, linear, ½ inch long, about 1 inch above, outer end of right eyebrow, direction of fracture horizontal wound suppurating. Dura mater intact, caused by a fall.	2 days	25 days	Recovered.
				<p><i>Symptoms.</i>—Rational; no paralysis.</p>			
				<p><i>History.</i>—Trephined depressed fragments elevated and removed; no rise of temperature; made excellent recovery.</p>			

ANCHYLOSTOMA IN THE NORTH-WESTERN PROVINCES.

By J. K. CLOSE,
CAPTAIN, I.M.S.,
Civil Surgeon, Bijnor.

THE following notes on the occurrence of anchylostoma and other intestinal parasites are taken from the records of 81 consecutive *post-mortem* examinations which I made while Civil Surgeon of Budaon in 1897. They are interesting as showing how common a parasite the

anchylostoma is. The accompanying table is a summary of the results:—

	Males.	Females.
Anchylostoma found alone in ...	22	9
„ and round worms in ...	4	7
„ and <i>Tinea mediocanellata</i> in ...	1	0
Anchylostoma, round worms and		
<i>Distoma crassum</i> in ...	1	0
Round worms alone in ...	2	7
<i>Tinea mediocanellata</i> alone in ...	0	1
No parasites found in ...	11	16
	—	—
Total ...	41	40

Total cases in which anchylostoma were found ...	28=68%	16=40%
Total of both groups ...	81	
Anchylostoma in ...	44=54%	

In most of the cases few anchylostoma were found; in only six were there more than twenty specimens, and in no case did it appear that anchylostomiasis was the cause of death. In the six cases where there were more than 20 worms death was due to wounds in two, hanging in one, poison in one, and dysentery in one. The cause of death could not be ascertained in the sixth, as the body was very much decomposed.

These parasites (anchylostoma) were not confined to any one locality, but were found in bodies sent in from every part of the district. They occurred in all classes, high and low castes, and in the well-to-do as well as the poor. Since coming to Bijnor I have found anchylostoma in three out of seven bodies examined.

In the case where *tinea medicanellata* was found along with anchylostoma, two complete tapeworms were present.

The presence of *Distoma crassum* in one case is interesting. I cannot find any reference to its having been found nearer than Assam where a case was described by Giles. In the present instance there were eleven of these large flukes. They were of a deep orange colour. So far as could be ascertained, the man in whose intestine they occurred had never been out of the district.*

TWO RECENT CASES OF SUCCESSFUL OPERATION FOR IMPACTED STONE IN THE URETER.†

By P. J. FREYER, M.A., M.D., M.CH.,

LT.-COL. I.M.S., RETIRED,
Surgeon to St. Peter's Hospital.

THE short paper to which I invite your attention this evening is to be regarded as a mere fragment—a brief contribution to the surgery of the ureter. This latter is a subject which, during the last few years, has engaged the attention of surgeons; and still, how few instances of operation for stone in the ureter have been placed upon record. I think you will agree with me that it is incumbent on every surgeon who meets with such cases in his practice to publish details thereof, so that, in time, we may have accumulated a sufficiently large and varied number, as a basis from which to draw authoritative conclusions as to the best methods of dealing with stone impacted in any particular part of the ureteral canal. It is in this spirit that I venture to place before you details of two cases of operation

for impacted ureteral calculus which have recently fallen to my lot, each in its way, I venture to think, possessing some features of interest.

Lieut. D., Royal Artillery, *æt.* 23, sent by Dr. Blood, of Woolwich, consulted me on July 19th, 1898. He had suffered, off and on, for nineteen months from renal colic and hæmaturia. The symptoms first set in at Malta in January, 1897, in the form of colicky pains in both loins, extending across the abdomen, whenever he rode on horseback. These were at first considered to be due to indigestion; but on the third or fourth day on dismounting he found that his urine contained blood, so he went on the sick list. The symptoms passed off in a few days with rest and treatment. Three weeks later, his duties being heavy and involving much riding, the symptoms returned, and he had again to go on the sick list. The pain at this period was mainly confined to the left side, commencing in the loin, shooting down to the groin, and sometimes across the abdomen, giving rise to the sensation of a string being tied tightly round the body. At no period did the pain shoot down into the testicles, nor was the organ retracted.

The symptoms continuing, he came to England in May, 1897, and placed himself under the care of a well-known London physician. The renal attacks with hæmaturia continued to come on periodically every fortnight or so, and, strange to say, two of his worst attacks seemed to have been brought on by short sailing trips, though he did not suffer from sea-sickness. Getting no better he returned to Malta in August, 1897, and during the voyage painless hæmaturia set in, which continued off and on, till September, when another severe attack of pain in the left loin occurred, and the hæmaturia suddenly ceased. He was then seen by Major Swabey, R.A.M.C., who diagnosed the case as one of stone in the kidney. Unable to continue at duty he went to Sicily, but the voyage again brought on hæmaturia, accompanied by fever, which, after lasting a week, again wound up with severe colic. He returned to duty at Malta at the end of the month of October, but had to lie down for several hours in the middle of the day to relieve the pain. The re-drilling commenced on November 1st, and the first route march brought on pain and hæmorrhage. He was excused marching and rode in a carriage, but though the pain was less the hæmorrhage continued. In December he passed two stones by the urethra, cylindrical in shape and like red sand-stone. The acute pain up to this was in the left side; and from that period till July, 1898, though there was occasional hæmaturia and the urine contained albumen, there was no severe pain, merely a dull aching in both loins.

In May 1898, he returned to England for duty at Woolwich. On July 10th he took a lot of exer-

* I have sent a full account of his case to the British Medical Association.

† Paper read before the Medical Society of London, January 23rd, 1899.

cise, and next day an acute attack of pain set in in the right side, which lasted seventy-two hours continuously, during which he was kept under the influence of morphia by Dr. Blood. The pain was excruciating, accompanied by restlessness, nausea, and vomiting, with constant desire to micturate, only a small quantity of high-coloured urine passing each time. For two days after this attack the urine was clear, but after that became thick and bloody again.

I found that there was a slightly movable tumour in the region of the right kidney as large as two fists, extremely tender on palpation both in the loin and in front. There was no stabbing pain on pressure at the back, but distinct tenderness at one spot in front, midway between the navel and the anterior superior spine of the ilium. Urine, colour of Madeira wine, acid, sp. gr. 1015, containing blood corpuscles and crystals of oxalate of lime, also albumen. The left kidney was normal. My diagnosis was—stone in the pelvis of the kidney, trying to pass down the ureter and causing obstruction of urine.

On July 30th the patient entered a surgical home, and on August 1st I operated, Mr. W. Braine giving the anæsthetic and Mr. B. Smeaton assisting. Drs. A. M. MacDonnell and H. T. Griffiths were also present. The kidney was rapidly exposed through an oblique lumbar incision four-half inches long, and the fatty capsule opened. No stone was detected on feeling it all over. The kidney, which was much enlarged and congested, was stripped of its fatty capsule and brought out on to the loin through the wound. I felt it carefully all over, but could detect no stone. The kidney was then opened through the convex border by means of a scalpel, and my finger passed into the pelvis, a rush of urine taking place through the wound, and the kidney collapsing much in size. No stone could be found, though my finger passed easily into the calyces, which, with the pelvis, formed a large, smooth-walled cavity. I then passed a catheter down the ureter as far as four inches from the pelvis, where it was obstructed. A long silver probe was then passed, and a stone felt in the ureter at this point.

The incision in the loin was at once extended downwards and inwards for four or five inches, and the peritoneum raised inwards from off the ureter by my fingers, till I could grasp the stone (which felt the size of a filbert), lying in the ureter between my finger and thumb. I made several attempts to push the stone upwards into the kidney, but it was too firmly impacted in the ureter, so the ureter was incised longitudinally over the stone, which was pushed through the wound by the point of my finger. A bougie was then passed into the bladder through the ureter from the pelvis. I did not suture the wound in the ureter because (1) suturing of the ureter when a stone is removed extra-peritoneally is a debatable proceeding;

(2) the ureter was so narrow that suturing would probably cause contraction of the canal; and (3) though I could extract the stone with the limited incision already indicated, the successful suturing of the ureter at the bottom of a deep wound was impossible without a much more extended dissection. I contended myself, therefore, by placing a large drainage tube down to the opening in the ureter, along the back of the kidney, bringing the muscles together by buried silk sutures, and the superficial parts by silk-worm gut. The wound in the kidney was partially closed by two sutures, the middle portion being left open so that the urine might flow freely through the loin, and thus avoid tension on the ureter till the wound in it should have healed.

Bloody urine was passed freely by the urethra in the evening, showing that the ureter was patent; and bloody urine by both loin and urethra for several days. On the third day I began to shorten the drainage tube daily, and this was completely removed on August 7th. On the 8th the wound was firmly united, save in the track of the drainage tube. On the 9th urine ceased to flow by the loin.

The patient made a rapid recovery; was sitting up on August 28th; went for a walk on September 2nd; and left the home on September 7th, travelling by train to Margate. Soon after he began to bicycle; he started to rejoin his battery at Gibraltar on November 15th. He is now in excellent health, and wrote to me in the end of December last that he does five or six hours work daily with his battery, ascending the rock 1,300 feet.

It may be of interest to mention, as bearing on the hereditary tendency of stone, that owing to the successful result in this case, the patient's mother, who for seventeen years had suffered from stone in the kidney, placed herself in my hands. On September 28th, 1898, I performed a lumbar nephro-lithotomy. Dr. Dudley Buxton, anæsthetist, and Mr. Swinford Edwards assisting me, removing one largish oxalate of lime-stone from the pelvis and several smaller ones from the calyces. The kidney, which was extremely large, was sutured. No urine passed by the wound, and the patient made a rapid and successful recovery. Furthermore, this lady's father suffered severely from gravel for many years before his death. Some years ago I operated successfully for stone in the bladder on three generations in the same year—son, father, and grandfather.

The second case, a man, *æt.* 53, has been a patient at St. Peter's Hospital, off and on, for thirteen years, suffering from multiple stricture of the urethra, which has been operated on several times, and symptoms of kidney stone. In 1895 his left kidney was explored for stone by another surgeon, but with a negative result. Temporary relief ensu-

ed, but the old symptoms again returned, and in the summer of 1897 he was very ill, the pain in the left loin being very severe at times, radiating to the groin and testicle and accompanied by hæmaturia, which at times was very profuse; there was also occasionally pain in the right loin. The urine was extremely thick and offensive, and on standing deposited pus amounting to half its bulk. I determined under these circumstances to explore the left kidney again, which was accomplished on September 1st, 1897, by an oblique lumbar incision. A most careful search was made, but no kidney was found, though I passed my fingers well up under the ribs, down to the iliac fossa, and inwards to the aorta, pushing the peritoneum out of the way. The patient rapidly recovered from the operation, but there was only a very temporary relief to the symptoms, which soon set in as bad as ever. Under the impression that the symptoms might in large part be due to backward pressure, resulting from the stricture, which had again contracted, so that a No. 6 bougie, English scale, was passed with difficulty, I performed internal urethrotomy on November 18th, 1897, cutting three dense cartilaginous strictures up to 16 of the English scale. The patient was extremely ill after the operation for two days with severe rigors, the temperature rising to 106 degs. F., and the urine being very scanty; but he recovered, though slowly, leaving the hospital early in January. This operation, though it afforded a free flow for the passage of his urine, did not much diminish his other symptoms. Though the pain in the left loin gradually diminished, that in the right loin increased, and for months he continued to attend the out-patient department, his urine constantly containing much pus, and at times a considerable quantity of blood. Occasionally the right loin became much swollen, and the disappearance of the swelling was always followed by an increase in the quantity of pus in the urine. In October, 1898, he began to complain of great irritability of the bladder; there was constant desire to pass water with pain at the end of the penis. He was admitted into hospital, and on November 9th I cystoscoped him under an anæsthetic, and detected a long, narrow, rough, pencil-shaped stone projecting into the bladder from the right ureteral opening. The portion of stone projecting into the bladder appeared by the cystoscope to be about $\frac{1}{2}$ inch long, and dark grey in colour. My colleague, Mr. Reginald Harrison, and others had an excellent view of the stone. I at once introduced a lithotrite, and after three or four unsuccessful attempts, eventually caught the stone between the blades, pulled it out of the ureteral opening, crushed it and removed the debris by the aspirator. The debris consisted of urates and weighed twelve grains. On November 23rd the patient was again cystoscoped. The bladder walls were coated with mucus; both

ureters were seen to be acting, and flakes of pus were seen issuing from them.

The patient has continued to improve steadily in health. The pains in the loins have disappeared; there is no hæmaturia, and scarcely any pus in his urine. He states that he is in better health than he has been for years.

The history of this case presents many points for speculation which would, however, be foreign to the purpose of this paper; the case being now brought forward only for the purpose of illustrating what I believe to be a novel method by which a stone projecting into the bladder from the ureter may possibly sometimes be successfully removed.

I will, in conclusion, briefly refer to five other instances of stone impacted or encysted in the ureter, which have been operated on by me—four of these during my experience in India. In three, the stone was impacted at the ureteral orifice, projecting into the bladder and felt by the sound. One occurred in a female, two in males. In each instance an operation was undertaken, under the impression that I had to deal with an ordinary case of stone in the bladder, and in each case the stone was dislodged from its position by introducing the forefinger through the dilated urethra in the female and through the ordinary perineal lithotomy wound in the males, scraping the orifice of the ureter by the finger nail, the stone being forced downwards and inwards by the hand placed on the groin, and then removed by the ordinary lithotomy forceps.

In the *British Medical Journal*, May 9th, 1891, page 1005, I have given details of a boy, æt. 15, from whom I removed, at two different sittings, by litholapaxy two separate stones, weighing respectively 757 and 581 grains, aggregating more than $3\frac{1}{4}$ ounces. After removing the first stone from the bladder, I found that there was a second lying in the lower part of the right ureter close to the bladder. The second stone was felt as a hard tumour in the loin, about three inches long, and could easily be felt in the ureter between a finger in the rectum and the hand on the groin. I determined to remove this stone by suprapubic cystotomy as soon as the patient should have recovered from the first operation, but on the fourth day the tumour in the groin suddenly disappeared, and a stone was felt lying free in the bladder, and successfully removed by litholapaxy. Evidently this latter stone, lying in the ureter, rested on the stone located in the bladder; as soon as this support was removed, the ureteral calculus was pushed into the bladder by the force of the accumulated urine behind it.

The fifth case is recorded in the *Medico-Chirurgical Transaction*, vol. 81. It was that of an obscure cystic tumour of the bladder, which contained two calculi, weighing 41 grains, removed supra pubically. My explanation of the

case was this—that the stones descending from the kidney were arrested at that portion of the ureter which passes obliquely through the bladder wall, and that, unable to escape owing to a contracted orifice, they bulged the bladder wall forwards, forming a smooth cystic tumour which was recognised by the cystoscope, and successfully dealt with in the way indicated.

THE JIGGER OR CHIGO PEST.

By E. C. COTES, M.A. (Oxon),

Late Deputy Superintendent of the Indian Museum, Calcutta,
and Fellow of Entomological Society of London. *

THIS pestiferous insect, *Sarcopsylla penetrans*, Linn., belongs to a group of degraded wingless Diptera, known by entomologists as Aphaniptera, Siphonaptera or Pulicidæ. It is closely related to the common flea, from which, however, it differs in habits. Its nearest relation in Asia is *Sarcopsylla gallinacea*, Westwood, which was described by Professor Westwood (*Entomologists' Monthly Magazine*, Volume XI, 1874-75, p. 246) from specimens found fastened to the eyelids and on the neck of domestic fowls at Colombo. The same species has since been identified on competent authority in specimens from Turkestan and from the United States of America (Gainesville Fla.)—vide A. S. Packard in U. S. Dept. Entomology Bulletin, Volume VII, 1894-95, p. 23. It is probable, therefore, that *Sarcopsylla gallinacea* occurs all over the world. Its relative, *Sarcopsylla penetrans*, on the other hand, appears to have been confined to South America and the West Indies up to the middle of the nineteenth century, when it is alleged to have been introduced on to the West Coast of Africa in sand ballast landed at Ambriz by a ship from Brazil. A good deal has been written about the jigger, the following being references to the more recent publications in which it is discussed: Packard, *Proc. Ent. Soc.*, Washington, Volume III. Jullien, *La Chique sur la Côte occidentale d'Afrique*, Bull. Soc. Zool. Fr. XIV, pp. 93-95 (containing notes on its habits).

Blanchard, Bull. Soc. Zool. Fr. 1889, pp. 95-99.

Raspail, *Note rectificative sur l'histoire de la Chique*, Bull. Soc. Zool. Fr. XIV, pp. 366-369.

Gronet, *Lett. Nat.* VII, pp. 6 and 13 (being a contribution to the Natural History of).

Packard, *Guide to the Study of Insects* (New York, 1880, p. 390) quoted below.

Comstock, *Manual for the Study of Insects*. Ithaca [New York 1895, p. 493. (quoted below)].

Johnston, *British Central Africa*. London, 1897, p. 368 (quoted below).

Deele, *Three Years in Savage Africa*. London, 1898, pp. 374 and 567 (quoted below).

Linnaeus (Syst. Nat., 13th Edit., Ins. tom I, Pt V, p. 2923) describes the jigger, which he calls "*Pulex penetrans*," as being "rosto

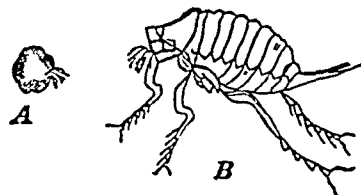
corporis longitudine," whereas the flea ("his *Pulex irritans*") is "rosto corpore brevior." Of the jigger he says: "Habitat in America, pedes hominum intrans, ova deponens, ulcera maligna saepe mortem causans, caute extrahendus, fusco rupeus, abdomine subtus feminae ovis innumeris gravidæ orbiculato, ad magnitudinis centuplam totius corporis intumescit."

Writing in the year 1781, Fabricius (*Species Insectorum*, Par. II, p. 383) refers to the previous descriptions of *Pulex penetrans* by Linnaeus and others as follows:—

"P. Proboscide corporis longitudine Syst. Ent. 733, 2 Linn. Syst. Nat. 2. 1021. 2, pulex cutem penetrans, Catesb. Carol. 3, 10, tab. 10, Fig. 3, Acarus fuscus sub cute nidulans, proboscide acutiori, Brown. Iam 418." He adds, almost in the words used by Linnaeus: "Habitat in America, pedes hominum intrans, ova deponens, caccethem, saepe mortem causans, caute extrahendus. Abdomen feminae ovis innumeris gravidum, orbiculatum, uti in termitte fatali ad magnitudinem centuplam totius corporis intumescit."

A.—Gravid female natural size.

B.—Active stage, much enlarged.



Sarcopsylla penetrans. Linn., after Packard.

Packard, in his *Guide to the Study of Insects* (New York, 1880, p. 390), speaks of the species as "one of the most serious insect torments of the tropics of America." He adds:—

The female, during the dry season, bores into the feet of the natives (though it also lives in dogs and mice, which accounts for its presence in houses), the operation requiring but a quarter of an hour, usually penetrating under the nails, and lives there until her body becomes distended with eggs, the abdomen swelling out to the size of a pea. The presence of this insect often causes distressing sores. The chigo lays about sixty eggs, according to Karsten, depositing them in a sort of sac on each side of the external opening of the oviduct. The larvæ do not live in the body of the parent, or of its host, but, like those of *pulex*, live free on the ground. The best preventives against its attacks are cleanliness and the constant wearing of shoes or slippers when in the house, and of boots when out of doors.

[Comstock in his *Manual for the Study of Insects* (Ithaca, New York, 1895) says, p. 493, under *Siphonaptera*—"The chigo or jigger, *Sarcopsylla penetrans*, is a small flea found in the West Indies and South America, which often causes serious trouble to men by burrowing beneath the skin of the foot. It is the fertile female that does this, and soon after entering its host, the body of the flea becomes distended with eggs and acquires the size of a pea."]

* We are indebted for this article to the courtesy of the Director-General, Indian Medical Service.

An important contribution to the history of the insect in Africa is made by Sir Harry Johnston, in his *British Central Africa* (Methuen, London, 1897), p. 368, where he writes:—

The burrowing flea (*Sarcopsyllus penetrans*) is quite a new arrival in this country. It is a native of South America and the West Indies, where it is usually known as the "Chigo" or "Jigger," and as such is supposed to be the origin of the sailor's oath—"Well, I'm jiggered!" In the earlier "fifties" a ship from Brazil landed sand ballast at Ambriz on the west coast of Africa, and thus introduced the jigger into the soil. The animal slowly spread through the sandier regions of Angola and along the West African Coast towards the Congo and Sierra Leone. At first it made its way up the Congo slowly, but Stanley's expedition and the spread of civilization over the Congo Free State carried this jigger far and wide. When I visited the Congo, the burrowing flea had scarcely got further up the river than Bolobo. Soon afterwards it reached the Stanley Falls, and thence made its way to Tanganyika in the Arab caravans. From Tanganyika it gradually spread southwards to Lake Nyasa, and was first heard of at Karonga about 1891. It reached South Nyasa the following year, and in 1894 became a great pest at Zomba and throughout the Shire Highlands, finally reaching Chinde on the sea coast in 1895. Fortunately it is an insect which apparently only thrives on sandy soils, and therefore in moist parts of British Central Africa it is already commencing to disappear. At first it caused terrible sufferings amongst our naked-footed soldiers, policemen and postmen, many of whom became lame by its bites. It caused the administration to go to great expense in providing boots for all these people. Gradually, however, the natives are getting used to its attacks, as they are in West Africa and in the West Indies, and by care and constant attention to the feet are able to keep it at bay. The jigger is a very minute flea, only just visible. The female creeps under the skin, preferring, if possible, those parts where there is a slight pressure, such as between the toes or fingers. The foot, however, is that portion of the human frame which it most usually attacks. Having burrowed under the surface of the skin the insect proceeds to lay a large number of eggs, which, together with itself, are enveloped in a white sac. After laying the eggs the mother dies, the young ones hatch out and proceed to devour all the surrounding tissues, burrowing in all directions until at last the neglected toe or other portion of the foot becomes honeycombed. In extreme cases mortification may set in, and the whole foot be lost even if the mischief spread no farther. But such a case as this could only occur when the insect first makes its appearance in a new country, and its advances are quite uninterrupted and neglected. If the jigger be removed within a few days after entry, the removal is very easy and relatively painless, and the evil consequences are nil. Still Europeans who are obliged to live in jigger-haunted localities should be careful to have their feet examined once a day by a native servant.

The natives are very sharp-eyed, and on a white skin it is easy to see the jigger burrowing like a little blue point under the surface. A little carbolic oil dropped into the hole from which the burrowing flea has been extracted will allay the irritation, which is caused by some liquid the animal exudes, and will effectively kill any eggs that may have escaped from the sac.

Fortunately the skin surrounding the sac is tough, and a skilful operator easily removes it unbroken. The jigger attacks not only human beings, but monkeys, dogs, fowls and turkeys.

In his *Three Years in Savage Africa*, London, 1898, Mr. Lionel Deele gives interesting particulars of the damage that the insect may occasion

in the initial stage, which Sir H. Johnston describes, before the people have become accustomed to it. On page 374 Mr. Deele writes:—

At Sindai, where we arrived that evening, my reputation as a Mfumu had preceded me, and I was met by a man who came to show me his foot. The little toe was enormously swollen and full of matter. I told him to go and wash it, because it would have to be opened. The imbecile misunderstood me and returned a quarter of an hour later, very tranquil, having cut off his toe. I dressed it, and in a few moments a dozen others had collected, with their feet in an awful condition from the jiggers. Half of them had removed the parts attacked, cutting themselves to the bone. Others had removed the big toe-nail. All these sores were most dreadful, and all I could do was to dress them with corrosive sublimate and iodoform.

It was there that I was first able to judge of the terrible havoc caused by funza—jiggers. In this village there was not a man, woman or child who was not covered with ulcers.

Again, in pages 567 to 571 of the same volume, Mr. Deele writes:—

But there is another plague, quite as serious, that threatens South Africa—a plague that nothing will stop, and that will seriously affect the labour market. I am speaking of the jiggers. This is an insect of the flea family, indigenous to South America. It was brought to West Africa by a slave ship. The jigger, or *Pulex penetrans*, is a small flea that burrows in the flesh, chiefly of the feet, choosing in preference the neighbourhood of the toe-nails. The female penetrates under the skin with its head only sticking out; this head is so small that it can only be detected with a magnifying-glass, and cannot be seen in the skin of a black man. At first it causes no pain, but after a couple of days it gives the same sensation as a small thorn. After five to six days the body of the insect reaches the size of a pea, and is full of eggs; the pain is then very great, and when the insect has been extracted its place is marked by a deep ulcer, that usually gets badly inflamed and often brings on blood-poisoning. The natives dig it out with a pointed piece of wood, tearing the skin all round to make a hole large enough to allow the body of the insect to come out without breaking the pocket of eggs. They imagine that if they break the pocket, the eggs will generate under their skin. They are right in a sense, as they possess no antiseptics; and I have myself seen a fellow out of whom two hundred jiggers were extracted! But even when a hole has been made large enough to allow the insect to be removed, it is most painful to get it out, as it is fastened to the ulcer it has produced. The best way is to open the place where the insect is with a lancet, and then to syringe the wound well with a sublimate lotion. The body of the insect having been removed with a forceps, the wound must again be well syringed, and carbolic oil applied to it. In order to avoid these pests getting to a large size, white men ought to have their feet carefully examined twice daily. When a jigger is discovered, it can be easily removed during the first two days with the point of a needle. In many cases, however, they cannot be discovered until they have reached a certain size, and then extraction often amounts to a regular operation. Often they penetrate under the edge of the nails, and I have seen some of them right under the middle of the nail; this necessitated a most painful operation. Boots are of little avail, and only prevent you from getting large numbers of them. They jump like a flea, and get at your foot by the top of the boot. Besides, when they have invaded a country, they are found on the ground outside and inside every house. Although I had my feet examined twice daily, I have had as many as three extracted at one time, after they had reached a good

size, as they had escaped the notice of my servants during three or four days. I had from two to four of them taken out almost daily. When Colonel Colville started for the Unyoro expedition, out of eight white men four of us were unable to wear a boot or walk, on account of ulcers brought on by the jiggers. Colonel Colville had seven of them extracted the day he left Kampala; and Dr. Moffat had to ride a donkey, his feet being tied up in bandages.

But it is among the natives that they cause the most damage. Among the Soudanese troops in Uganda I have myself made the following observations. At Fort Raymond the garrison consisted of 160 askaris (soldiers) and 70 porters; out of this number of men 72 askaris and 30 porters were absolutely unfit for service through ulcers brought on by jiggers, and 30 more men were lame. At Fort Grant the proportion of invalids through jiggers was over 50 per cent. I was in charge of the Medical Department - having volunteered to help Major Owen during the war—and never in my life have I seen such awful ulcers. Some of the men had the bone of their big toe protruding fleshless for more than an inch; others had quite a square inch of the bone of the heel exposed. I remember, among others, a corporal whose foot was covered with an ulcer about five inches long by three inches broad. In some villages of Uduhu (south of Lake Victoria Nyanza) I found the people starving, as they were so rotten with ulcers from jiggers that they had been unable to work in their fields, and could not even go to cut the few bananas that had been growing. In many villages of Uganda things were almost as bad. When I crossed Africa, I found the first trace of jiggers at Mabwe, half-way between Lake Nyasa and Lake Tanganika. From there I found them all over the shores of Lake Tanganika, in Uhlu, in Unyamwezi, in Usikuma, all over the shores of Lake Victoria Nyanza, throughout Uganda and Usoga. The southern part of the Masai country alone was free from them.

Sir Harry Johnston informed me last summer that the jiggers have come down to Blantyre, having, therefore, travelled about 500 miles southward in two years' time. I calculate, accordingly, that they will reach Mashonaland in about two years' time, and with the railway communication they will be all over the Cape Colony in a year more. In fact, I feel absolutely certain that they will invade the Colony before the year 1900.* Those only who have seen what damage the jiggers cause can realize what the prospect means for South Africa. The matter is most serious, and steps should be taken to try to ward off the danger.

To give an idea of the prolific way in which they generate, I must explain that the moment the jigger is taken out of the flesh, she begins to lay her eggs; and I have counted, with a magnifying glass, 150 eggs that came out of one jigger in less than 30 seconds, and she went on laying them for more than five minutes. Even if a jigger lays only 500 eggs—and this is far below the number—it must be remembered that these become insects in a few days, and it may be understood how the whole of Africa north of the Zambezi is now infested with them. Sandy soil is the most suitable to their development, and in all the sandy regions where I found them the place swarmed with them. The natives are chiefly responsible for their increase, as, instead of destroying them as they extract them from their skin, they merely throw them on the ground, where they soon generate.

Animals are also attacked by them—dogs, monkeys, fowls, and others. I saw in Muanza, south of Lake Victoria Nyanza, a tame eagle that had lost one of his legs through jiggers. In order to give an idea of the way in which these insects attack men, I may quote the example of a dwarf (one of those discovered by Mr. Stanley) who was in the service of Major Owen. The

little fellow was very dirty, and while Major Owen went to Unyoro, he was left for a month at Fort Raymond. When we returned there, we found that he could not walk, and having examined him, I discovered that he was full of jiggers. I got a Soudanese to take them out, and the first day he got two hundred and eighty out of the boy's body. His feet, his toes, knees, hands, fingers, elbows, shoulders, and back were full of them, and when he was brought to me after the operation, he was a mass of blood, and it took me over an hour to bandage him.

As I have explained, the natives dig the jiggers out with a pointed bit of wood, breaking the skin all round the body of the insect. The result is that the skin gets hardened and mortified, and when fresh jiggers get in the same spot, they cannot be discovered till they have grown quite large, and often they are so deep in the flesh, having crept in by one of the crevices left in the mortified skin, that a hole half an inch deep has to be made before they can be got at. The result is usually a deep ulcer, dirt gets in, and the native medicines they apply to it, consisting of all sorts of filth, bring on gangrene, causing death or at least the loss of a limb. In many instances I have had to perform amputations of toes in order to save a man from the effects of gangrene, and in all such cases I found iodoform the most effective antiseptic to prevent ulceration after the jigger had been extracted.

In fact, the natives soon learned its use; and when I arrived in Karagwe, a native Chief, having heard that a white man had landed, came from a long distance to ask me for yellow medicine. A brother of his, he said, had some of the yellow *dawa* (medicine) given to him by a German officer, and if I would give him some he would give me anything I liked. I gave him a little iodoform, and in the evening his *katikiro* (Prime Minister) came also to beg for some of it. I had obtained canoes from the Chief to take me to Uganda, and being short of iodoform I did not care to spare any more; so I made a mixture of iodoform and sulphate of zinc.

The *katikiro*, however, soon returned, and complained that his medicine was not as yellow as the one I had given to the Chief. I replied that he could not expect the same medicine as a big Chief, and he quite understood the distinction.

To conclude, I think that I have done my duty in pointing out the serious and new danger that threatens South Africa.

I feel sorry to appear as a prophet of evil, but perhaps my warning may enable the Government to take steps to check the impending danger. I cannot think of any measure that may stop the invasion, but I should advise the responsible authorities to have the subject thoroughly studied, so that, when this new plague makes its appearance, it may not take the people unawares, and that proper remedies may be known beforehand, and precautions recommended to avoid the spreading of the pest. From Central America and the West Indies, whence the jigger comes, considerable information can be obtained on the subject, and measures should be taken to obtain it without delay. My experience makes me look upon the jigger as the greatest curse that has ever afflicted Africa, and I hope that my warning will be taken up and turned to practical account.

It is to the above passages in Mr. Deele's book that reference is made in an article headed *A Real Danger to India*, which appears in the *Allahabad Pioneer*, dated 30th December 1898.

It will be seen from the above that the jigger can be a very serious pest when it first invades a country, though once the people get used to it, it becomes rather a nuisance than a grave infliction. This is borne out not only by the experiences in British Central Africa described

* They had already made their appearance in Beria in 1896.

by Sir H. Johnston, but by what is said about the insect by those who have been in South America, where it is a constant source of possible annoyance to any one who incautiously goes about without shoes, and who fails to take the precaution, which every one in Demerara is said to get used to, of examining his feet afterwards.

For those who wear shoes, however, and examine their feet often, the evil apparently becomes comparable to that caused by the mosquito, in connection with which it would not be difficult to rake up harrowing tales of people who have got blood-poisoning, and even died from being bitten!

At the same time, the jigger evil is certainly one that is worth taking trouble to avoid importing into India.

In this connection it may not be out of place to observe that there has been for many years a large coolie and rice traffic between Calcutta and both South America and the West Indies, without the insect succeeding in establishing itself on this side. It does not, of course, follow that it has never been brought to India, for it is a common remark amongst entomologists that what may amount to a serious pest in one place and time may in another locality or at another time find conditions so inimical that, though present, it may fail to multiply sufficiently to become noticeable. Two other points will also be observed in connection with the jigger: one is that damp coasts like those of Bombay and Calcutta are said to be unfavourable to its development; the other is that, although in slave-dealing times there must have been considerable traffic between the west coast of Africa and the West Indies, where the jigger exists, it is believed to have been in ballast and not on the persons of coolies that the pest was eventually imported. This is easily explained by the life history of the insect, which passes one stage of its existence in a free state on the ground. The inference is obvious in regard to preventive measures, which would, of course, have to be used against South America and the West Indies as well as against Africa. In this connection it may be observed that what is known about the susceptibility of allied insects to the effect of different insecticides points strongly, it might be said conclusively, to the supposition that kerosene oil used broadcast would be the most effectual disinfectant on boardship against the jigger.

Further suggestions of utility might possibly be obtained through the Governments of such Colonies as Demerara and Jamaica; an important point to ascertain being the length of time the larval form is capable of living in a free state in ballast or dust on boardship. It would, of course, be to some extent upon this that would depend the length of time an infected vessel required to be quarantined, though supposing the observation recorded by Dr. Packard

to be confirmed, *viz.*, that the insect is parasitic upon mice as well as men, it is likely that rats also would be liable to act as hosts, in which case mere quarantining would be insufficient. It may be added that the burning of sulphur on boardship is quite useless against such insects as the jigger, though it is possible that it might have some effect in killing rats that might otherwise convey the infection. Upon the whole, the danger seems so remote, and the difficulty of really effectual preventive measures so great, that all that can be at all confidently recommended is to make masters and ships' doctors responsible for reporting cases of the pest on board; the vessel to be thereafter swabbed down with kerosene oil under the supervision of the Port Health Officer, and restrictions imposed upon the dumping on shore of sand ballast from infected localities.

A Miquoy of Hospital Practice.

NINE CASES OF LIVER ABSCESS AND CASE OF HYDATID OF LIVER

TREATED IN THE BERHAMPUR HOSPITAL
DURING THE YEAR, 1898.

By MAJOR J. H. TULL-WALSH, R.M.S.

For the notes of these cases I am, in the main, indebted to Assistant-Surgeon Mrigendra Lal Mitra, the Medical Officer in charge of the Municipal Hospital.

CASE I.—R. C., Hindu male, aged 67. General health good. History of dysentery; also addicted to alcohol. For two months had been suffering from "fever," pain and enlargement of the liver. Admitted to hospital on 3rd January. On the same day, Assistant Surgeon Mrigendra Lal Mitra introduced three trocars into the liver in a line over the most prominent part of the tumour. These trocars were left *in situ*. After an interval of 48 hours, a free incision was made between two of the trocars. The pus was washed out and a drainage tube introduced. The abscess was a large one and for the first two or three days the dressings had to be changed two or three times daily. After a week there was little discharge and the drainage tube was shortened from time to time. The patient left hospital cured after twenty-six days. The abscess was in the right lobe of the liver, upper and anterior portion.

CASE II.—K. M. C., Hindu male, aged 60. General health bad; much emaciated. The man was addicted to drink, and had also had several attacks of dysentery during the previous six months. Two months before admission to hospital, he felt an acute pain in the region of the liver which

pain increased daily. A swelling appeared in the right hypochondriac region. He suffered from "fever." Irritants had been applied to the skin over the liver by native quacks. He was admitted into the Berhampur Hospital on 18th February. Temperature, 103° F. On the same day, the Civil Surgeon introduced three trocars into the tumour as in case I. Forty-eight hours after, a free incision was made. The pus was thin and foetid, and the abscess cavity was washed out with boracic lotion. A tube was introduced. On the 19th February, the temperature went up to 104° F., and against all advice the patient's friends removed him from the hospital. It was ascertained that he died at home the day after his removal. The abscess was in the right lobe of the liver.

CASE III.—Hindu male. The notes of this case have been lost, but he was admitted early in the year and recovered after the operation. No further information can be found in the hospital records.

CASE IV.—I., Hindu male, aged 38. General condition good. Admitted to hospital on 27th March for a tumour in the hepatic region of eight years' standing. Addicted to drinking alcohol. Complained of colicky pains, not always present, but coming on now and then. Temperature 100.2° F. on admission. The temperature remained between 100° F. and 101.2° F. until the night of the 28th, when it rose to 102° F. On the morning of the 29th March, Major Macdonald, I.M.S., introduced two trocars into the tumour and a thin watery fluid escaped. The tumour was then diagnosed as a hydatid tumour connected with the right lobe of the liver. On the 1st April, a free incision was made into the tumour, the cyst was stitched to the abdominal parietes and a drainage tube inserted. Although there was no suppuration, the temperature did not become normal until ten days after the operation after continued doses of quinine. It is probable therefore that the "fever" was of malarial origin and not connected with the presence of the cyst. A large number of "daughter cysts" were discharged and the cyst wall came away slowly. A fistula remained for some time, but the patient was ultimately discharged cured on the 10th July.

CASE V.—R. C., Hindu male, aged 55. General condition fair. The patient stated that for about one year he had suffered from a gnawing pain in the right hypochondrium. For a month the pain had been severe, and he had been suffering from "fever." He was addicted to alcohol. No history of dysentery. The liver was much enlarged downwards, and the tissues of the abdominal wall over the tumour were cedematous. Admitted to hospital on 9th May 1898. On the 11th May, Assistant-Surgeon M. L. Mittra introduced three trocars into the tumour through which pus discharged freely. After forty-eight hours,

a free incision was made. The cavity was not washed out as the pus was not foetid. A drainage tube was inserted. The progress of the case was good and the patient left hospital cured 35 days after the operation.

CASE VI.—M., Hindu male, aged 35. In poor health. Has been suffering from "fever," pain, &c., for four months. There was a fluctuating swelling on the right side of the chest. Admitted on 25th August 1898. I made a free opening between the 8th and 9th ribs. The cavity was washed out with boracic lotion, and a drainage tube inserted. There was considerable discharge, but the temperature became normal almost at once. The discharge decreased, but after about ten days it suddenly increased and the temperature rose again. The patient also complained of pain in front just to the right side of the ensiform cartilage. On introducing a long probe, a sinus was found leading into a second abscess in the right lobe, but nearer the middle line. As the discharge appeared free, no further incision was made. The patient still did not improve very fast, and on the 7th November, another abscess pointed just to the right of the ensiform cartilage. With the pus from this abscess there came out a piece of cartilage about one inch long by half an inch wide. On the 17th November, the first opening was enlarged to give free drainage both ways. The temperature again went down to normal, but was subject to occasional rises for which it was not easy to account. On the 5th December the patient left the hospital not quite cured and against advice. When last heard of, he was doing well. There is no distinct history in this case of dysentery or any other likely cause. Histories as given by natives are unfortunately not very clear or valuable.

CASE VII.—U., Hindu male, aged 14 years. General condition good. History of a blow some time ago, but he felt nothing particular until fifteen days ago. He then suffered from "fever," and a pain in the right hypochondrium. Admitted on 7th September. There was a small fluctuating swelling just below the ribs on the right front. The tumour was explored, and pus being found, an incision was made at once. About four ounces of pus came out. The highest temperature was 101° F. on the day of operation. The next day the temperature was normal. The abscess filled up rapidly, and the patient left hospital on 14th September. There was a small sinus which has since closed. The boy is now quite well.

CASE VIII.—S., Hindu male, 40 years of age. Very weak and thin. About 3 months previously, the man was struck on the right side by a cart. Shortly after the accident he felt pain over the liver, and had an attack of "fever." There was no "fever" at the time of admission to hospital. There was a hard swelling over the front of the liver on the right side, and the

skin over the tumour was tender and cedematous. The swelling reached down to the level of the umbilicus. Admitted to Hospital on 11th November. Under chloroform, the liver was exposed with a needle and a large abscess found. An incision was at once made into it and a very large quantity of thin pus came out. As the cavity was very large and there was some bleeding, it was packed with sal-alembroth gauze. The man was in a very feeble state when admitted, and he gradually sank and died on the morning of the 14th November. The abscess occupied nearly the whole of the right lobe of the liver.

CASE IX.—P. H., Hindu male, aged 45. Suffering from pain in the region of the liver and swelling for the past six months. Has been in the habit of taking alcohol. Had an attack of dysentery with fever four months ago. Has had other attacks. Admitted to hospital on 29th September. The liver was much enlarged downwards, two inches below the costal margin. The intercostal spaces on the right side bulged. Distinct fluctuation in the 8th intercostal space. Temperature on admission, 99° 8' F. Temperature on the evening of the 30th, 100° F. after operation. On the morning of the 30th September, I made a free incision into the liver at the point of fluctuation, washed out the abscess cavity and packed it with antiseptic gauze. The temperature was normal on the 4th October, and a drainage tube was inserted in place of the gauze packing. The temperature remained normal and the man made a good recovery. He was discharged cured on the 20th November.

CASE X.—Hindu male, aged 38. In very bad condition, thin and emaciated. No history of alcohol or dysentery, but had a blow on the right side about three months ago. Shortly afterwards felt pain in the right side and had "fever." Admitted to hospital on 11th December. The same day, an incision was made into the most prominent part of the swelling in front just below the ribs on the right side. More than a quart of pus came out. The cavity was packed with antiseptic gauze. The next day, the gauze was removed and a drainage tube inserted. The temperature was generally normal, but reached 99° to 99° 8' F. in the evenings. The tongue was red and glazed, and the man very feeble. Diarrhoea set in on the 21st December, and blood was seen in the stools on the 22nd. The patient continued to suffer from dysenteric diarrhoea and died on the 26th of December.

Of the nine cases of liver abscess, six recovered and three died. The cases in which the patients died were Nos. II, VIII and V and in all three, the patients were in a very feeble condition on admission to hospital, and the prognosis was not favourable from the outset. In all nine cases, the abscess (in case VI, two abscesses) was in the right lobe of the liver.

- As regards causation, known or probable :—
 Case I "dysentery; also addicted to alcohol."
 Case II "was addicted to drink and had also had several attacks of dysentery during the previous six months."
 Case III unknown:
 Case V "addicted to alcohol; no history of dysentery."
 Case VI "no history of dysentery; not addicted to alcohol."
 Case VII "a blow" (age 14 years):
 Case VIII "a blow."
 Case IX "in the habit of taking alcohol; had an attack of dysentery with fever four months ago."
 Case X "a blow."

As regards the abuse of alcohol such abuse is very common among the lower classes in this district, and by itself may predispose to congestion of the liver. Indulgence in alcohol alone, however, can hardly be a cause of liver abscess. Dysentery will, I think, be found present in the majority of cases of abscess of the liver. As regards treatment, immediate free incision is the best. The previous introduction of trocars offers no advantages, and the aspirator should only be regarded as an instrument for diagnosis.

KASHMIR MISSION HOSPITAL.

A YEAR'S SURGICAL WORK.

By E. F. NEVE, M.D., F.R.C.S. (EDIN.).

DURING the past year (1898) there were 2,918 surgical operations.

Kashmir is, on the whole, wonderfully free from sickness dependent on climate. Great tracts of the country lie permanently under water and many large areas are exposed to annual floods. During the summer months, the valley is little more than an alluvial plain covered with rice fields and swamps. Mosquitoes abound! And yet, owing to the altitude, malarial disease is quite rare. The Kashmiris hardly suffer from it at all. Diseases of the eye are however very numerous, especially ophthalmia and entropion. Cataract is much less common than in the plains. Diseases of the skin, especially those which are parasitic, simply abound. Scabies for instance is universal. Digestive affections are extremely common and are often due to the great excess of starch consumed in a diet, which consists so largely of rice. Dilated stomach is of frequent occurrence. In the winter, respiratory complaints, especially bronchitis, abound, and rheumatism is very prevalent. There is a fairly representative series of the general diseases with which we meet in Europe. But the variety is more limited, and some affections are conspicuous by their absence, e.g., scarlet fever and diphtheria.

Phthisis is comparatively rare and chiefly confined to those, such as shawl weavers who lead in-door lives, in impure atmosphere. Pneumonia and pleurisy are seldom met with; rickets is rare. It is astonishing to how large an extent our out-patient practice is surgical, and the proportion of surgical patients who require operative treatment is equally surprising. Seven hundred and ninety-three operations were performed for eye disease. Of these more than half were for entropion. Fifty cataracts were extracted, the only failure being due to occluding iritis.

Tumours form a considerable item in our operation lists. Seventy-four epitheliomata, including 11 of the breast, were excised without a death. Twenty-eight cases of tubercular glands were treated by excision, in some a very large number of diseased glands being removed. Another successful ovariectomy was performed.

Several of the sarcomata met with this year were of a formidable character. An immense growth of the abdominal wall of six years standing, and another very large myeloid sarcoma of the lower jaw, were excised, and the patients made an excellent recovery. For bone disease alone 198 operations were performed without a death. There were nine successful operations for the radical cure of hernia; these included one for strangulated hernia by Dr. W. F. Adams, a bad case, rescued from the jaws of death.

During the past year amongst others, papers have been published by us in the *British Medical Journal* on 750 cases of cataract extraction and on chloroform administration based on an experience of 8,000 cases.

TABLE OF OPERATIONS AND RESULTS.

	Cured.	Improved.	Not improved.	Left hospital.	Died.
EYE.					
Cataract ...	48	1	1	...	...
Iridectomy ...	18	23	4	...	...
Entropion and trichiasis ...	462	...	...	...	...
Pterygium ...	108	4	...	...	...
Excision of eyeball ...	3	...	...	...	...
Abcission for ant. staphyloma ..	16	2	...	...	...
Lachrymal obstruct, &c. ...	12	35	...	...	...
Other eye operations ...	25	29	2	...	...
Total ...	692	94	7	...	...
EAR.					
Gouging of mastoid antrum ...	2	1	...	...	...
Foreign bodies removed ...	17	...	...	...	...
Other ear operations ...	6	...	...	...	...
Total ...	25	1	...	...	...

TABLE OF OPERATIONS AND RESULTS—continued.

	Cured.	Improved.	Not improved.	Left hospital.	Died.
NOSE AND THROAT.					
Polypus nasi evulsion ...	8	...	...	...	...
Foreign bodies removed ...	6	...	...	...	...
Antral disease ...	3	1	...	...	...
Other operations ...	12	...	...	...	...
Total ...	29	1	...	...	...
BONES.					
Incision for acute supp. periostitis ...	8	1	...	...	...
Osteotomy for osteitis ...	49	1	...	...	...
Sequestrotomy, &c., of—					
Lower jaw ...	9	...	...	...	...
Upper extremity ...	15	1	...	...	...
Lower " ...	84	2	...	...	...
Other bone operations ...	27	1	...	...	...
Total ...	192	6	...	...	...
JOINTS.					
Excision of knee ...	2	...	...	...	...
" " elbow ...	2	...	...	...	...
Arthrectomy of elbow ...	4	...	...	...	...
" " knee ...	...	...	...	...	1
Drainage of large joints ...	4	2	...	...	...
Forcible straightening of ankylosed joints ...	19	11	...	...	...
Other joint operations ...	15	2	2	...	...
Total ...	46	15	2	...	1
AMPUTATIONS.					
Major, of upper extremity ...	4	...	...	...	...
" of lower " ...	9	...	...	1*	...
Minor ...	17	...	...	1	...
Total ...	30	...	...	2	...
INJURIES.					
Simple fractures ...	11	1	...	...	...
Compound fractures, cranium ...	...	1	...	...	...
" " femur ...	3	1	...	...	...
" " tibia and fibula ...	2	1	...	...	...
" " other bones ...	...	1	...	2	...
Severe wounds—					
Bear maul ...	7	...	...	...	...
Snake bites ...	2	...	...	...	...
Dog, &c. ...	7	...	...	...	...
Gunshot wounds ...	1	...	...	...	...
Severe abdominal wounds ...	...	...	...	...	2†
Other injuries ...	31	1	...	...	...
Total ...	64	6	...	2	2
TUMOURS.					
Epithelioma ...	70	4	...	...	...
Sarcoma ...	16	1	...	...	2
Ovariectomy ...	1	1	...	...	...
Other tumours ...	108	...	...	...	1
Total ...	195	6	...	...	3
TAPPING, &c.					
Ascites ...	2	33	...	...	...
Hydrocele ...	12	4	...	...	...
Various ...	5	4	...	...	...
Total ...	19	41	...	...	...

* Probably to die.

† In extremis when admitted.

TABLE OF OPERATIONS AND RESULTS—concluded.

		Cured.	Improved.	Not improved.	Left hospital.	Died.
MISCELLANEOUS.						
Nerve stretchings ...	...	32	7	...	...	...
Hernia, radical cure ...	...	8	...	...	...	...
" strangd. ...	...	1	...	...	...	...
Laparotomy exploratory ...	...	1	...	...	...	...
Cystotomy ...	...	1	2	...	...	...
Large ulcers, Volkmanized ...	...	121	35	...	...	...
" abscesses ...	...	131	4	...	...	...
Foreign bodies ...	...	22	...	...	...	...
Cicatricial deformities ...	...	14	4	...	...	...
Various ...	...	138	30	...	3	2
Total ...	...	469	82	...	3	2
CALCULUS.						
Litholapaxy ...	...	2	...	...	1	1
Perin. lithotomy ...	...	2	...	...	...	...
Ureth. calculi ...	...	2	...	...	...	...
Salivary ...	...	1	...	...	...	...
Total ...	...	7	...	...	1	1
MINOR OPERATIONS.						
Small abscesses ...	...	180	5	...	...	...
Caries teeth ...	...	356	...	...	...	...
Other unclassified ...	...	190	126	12	1	...
Total ...	...	726	131	...	1	...
GRAND TOTAL ...	...	2,4	383	23	9	9
Chloroform administration ...	...	...	...	...	673	...
Cocaine anæsthesia ...	...	...	...	...	223	...

CASES IN MOFASSIL DISPENSARY PRACTICE.

By F. P. MAYNARD, M. B.,
CAPTAIN, I.M.S.

I. *Gunshot wound of head.*—A Lohar, aged 42, was brought to the Ranchi Dispensary with the history that, while out with many others shooting deer, he was wounded in the head. He became unconscious he said and lost about two pints of blood. On admission, 24 hours later, he was conscious and, with the exception of a little fever, seemed but slightly ill. On examination a jagged wound of entrance was found immediately below the right zygoma $\frac{3}{4}$ " in front of the tragus. There was no wound of exit. There was, however, considerable swelling round the angle of the left side of the lower jaw, *i.e.*, on the opposite side of the head. The angle of the jawbone appeared to be broken off and movable, and the left ascending ramus was also found to be fractured. On probing the wound the bullet seemed to be at the bottom of it, and it was thought that possibly the fractures on the left side might be due to a fall subsequent to the

infliction of the injury or even to contrecoup. The patient had difficulty in swallowing and could not open or shut his mouth. The finger passed into the throat revealed much swelling, over the right Eustachian tube, none over the left. Under chloroform the wound was enlarged, and a comminuted fracture of the condyle and neck of the lower jaw found. Two fragments were removed; no bullet was found. A probe passed $1\frac{3}{4}$ " inwards in the direction of the angle of the left lower jaw and then stopped. No force was used. An incision 1" long was then made over the left angle of the jaw parallel to the sterno-mastoid and dissection carried down carefully through the deep fascia deeper than the bone. A movable object was then felt deep in the neck, and a director passed in proved it to be a bullet. Dressing forceps were pushed in and the bullet extracted with some difficulty. It was found to be an irregularly cylindrical slug measuring $1\frac{1}{4} \times \frac{1}{2}$ and surrounded by a bit of linen. Drainage tubes were put into each wound and with daily dressings recovery was uninterrupted. On leaving hospital a fortnight later, the wounds were all but healed, and he could separate his incisor teeth half an inch. The interest of the case lies in the rapid recovery from a bullet wound traversing such important parts at the base of the skull without any very serious damage.

II. *A case of Rickets.*—The idea of reporting a case of rickets in any European country would be absurd. In India, however, the disease is so rare that the following notes of a case believed to be an example of it are given. A *gwallah*, aged 12 years, was admitted to the Hazaribagh Dispensary with his father, suffering from painful nodes on his tibiae. The father was healthy and had no signs of syphilis. He had had four other children (3 male and 1 female) said to have been healthy, but who all died young. The patient was nursed by his mother until he was five or six years of age. His first teeth appeared when twelve months old. Three years ago the swellings on the tibiae were noticed, they were very painful and tender, especially at night. He had had fever off and on and spleen for two months. He never had any illness accompanied by cough. On admission he was seen to be of average size, rather anæmic and thin. His ribs were markedly beaded, the nodules being nearly the size of cherries. The thorax was not misshapen. The teeth, face and eyes were normal, and the spleen was enlarged half-way down to the navel. There were fairly large diffused nodes on both tibiae (two on each), right radius and both ulnæ near the elbow joints. With the exception possibly of these nodes there was no sign of syphilis. He was put on cod liver oil and syrup of iodide of iron, and tincture of iodine was painted over the nodes. This treatment gave some relief, but the patient got tired and left the hospital.

I have a male dachshund pup three months old which has shown distinct signs of rickets, its ribs are beaded, and all its bones very tender. It is puny and ill-developed, and is the son of his mother by her own father, i.e., his father and mother are father and daughter. His brother is a strong and healthy pup and probably the rickety pup became so from not being strong enough at first to obtain his fair share of his mother's milk. With careful feeding he is improving.

III. *Spider - (?) sting : death.*—A Kahar boy, three years old, said to have been stung on the left thumb by a black spider the previous night, was brought to the Hazaribagh Dispensary on the morning of the 5th October last. The father saw the spider and said it was black with long legs. The hand and whole arm rapidly swelled, and blood appeared in the urine at 1 A.M. The mark of a small puncture was visible on the palmar surface of the left thumb. When seen the child was evidently very ill, delirious, temperature 103.2° , pulse rapid, slight jaundice, and the first urine seen contained much blood. The whole arm up to the axilla was much swollen. There were a large blood-containing bulla in the palm and several smaller ones on the forearm. The parents would not stay as in-patients, but preferred to bring the child night and morning. Nitrate of silver solution was painted on the arm, and a diaphoretic mixture given. The urine became free from blood on the evening of the 6th, but the fever remained high. On the 7th the swelling began to go down and the fever also; on the 8th the temperature had fallen to 100° and the child seemed better. Next day, 9th (i.e., 5 days after the bite), the child was not brought, and we ascertained that it died that day, presumably of exhaustion.

The following two cases illustrate both the terrible injuries sometimes caused by primitive weapons, and the length of time patients may survive after the infliction of very severe injuries to the spinal column:—

IV. A Hindu girl, aged fifteen years, was admitted to the Ranchi Dispensary on May 23rd 1897, suffering from wounds said to have been inflicted by her jealous husband three days previously. The wounds were caused by an axe and were three in number, one over the left side of the neck down to the muscles, one across the left loin, and the third was through the left foot at the ankle, almost severing it. The foot was gangrenous and hanging by a piece of skin. It was removed. The second wound was 5" long and ran across the left loin slantingly, being higher up at its left extremity. The skin was bruised at its lower margin. The wound was deep from end to end and divided the erector spinal muscle, and partially the vertebræ, opening the canal in which the spinal cord lay exposed opposite the first lumbar vertebra. The left kidney in its unopened capsule presented in

the bottom of the wound. On admission, after a long-trying journey, the patient had fever (101°) and was at times delirious. There was no paralysis and she passed water and stools naturally. The wound was foul and discharging freely. Sloughing followed, the wound enlarged with the constant restlessness, and the patient gradually sank and died on the 26th May. At the *post-mortem* the wound was found to be through the first lumbar vertebra, and the spinal cord, kidney and colon to be exposed in it. All the spines, transverse processes of the lumbar and upper sacral vertebræ were stripped of periosteum. Death occurred six days after the injury.

V. A Loharin (female), aged twenty-five years, was admitted to the Hazaribagh Dispensary on March 19th, 1899. Suffering from extensive injuries to the cervical spine said to have been inflicted by her husband, who regarded her as a witch, with an axe on the 17th idem.

The wound was incised and measured 5" long, 2" deep, and $1\frac{1}{2}$ " wide where its centre gaped. It ran transversely and slightly obliquely downwards to the left across the back of the neck just below the hair edge. All the neck muscles and the spinal column were divided as far as but not through the spinal cord. On admission after a journey of over sixty miles, she was found to be completely paralysed from the neck downwards, the diaphragm being the only muscle acting. There was incomplete analgesia anæsthesia over both lower extremities. Plantar reflexes present in excess. Urine had not been passed for three days, and the bladder reached to the umbilicus. Bowels also constipated and relieved by enema. Her temperature was 104° . She was quite conscious and rational, and was able to give her depositions.

Next day, 20th, her temperature was 102° . The analgesia of the legs was less, though localisation was doubtful, right mistaken for left leg, &c. Plantar reflexes less marked and patellar reflexes absent. Reflex contraction of extensor muscles of forearm, triceps and thigh muscles occurred on pricking the skin. There was no dyspnoea, the breathing was intercostal as well as diaphragmatic. She swallowed well. The pulse was 120, and irregular every three or four beats. She sometimes appeared to notice when flies settled on her feet and asked for them to be covered up. The urine had to be drawn off by catheters. The wound was septic on arrival and sloughed. No stool was passed until the 23rd. On the 25th she appeared to know when her bladder was full and asked for relief. She gradually got worse however, fever running up to 100° to 102° each evening, and she died on the 27th, on the eleventh day after the injury. At the *post-mortem* the second cervical was found to be the vertebra divided and the membranes of the spinal cord were also found to have been divided.

THE
Indian Medical Gazette.
 MAY, 1899.

THE TREATMENT OF CARBUNCLE.

THE reluctance shown by many leading English surgeons to adopt the radical method of treating carbuncles is a striking and unaccountable feature of modern surgery. This method of treatment, although of ancient origin, is based upon such sound principles, and followed by such admirable results, that it is difficult to fathom the reasons which have led to its unpopularity amongst English surgeons. That it is unpopular is evident from the manner in which the subject is dealt with in all the modern surgical text-books. The Editor of *Erichsen's Surgery*, for example, writes as follows:—

"Hueter advises that if the patient is strong enough to stand the necessary loss of blood, and if the carbuncle be not too large, the whole slough should be scraped or dissected away at the time the incision is made."

The Editor himself makes no comment upon this method of treatment, and presumably regards it with suspicion; at any rate he does not venture to undertake the responsibility of recommending it. *Treves' System of Surgery* treats of the question thus:—"An ancient plan of treatment of carbuncle has, however, been lately revised, consisting in cutting with scissors and scraping away all the slough in the belief that this shortens the healing process. An anæsthetic should be given in order to do this. Undoubtedly some time, and perhaps considerable pain, are occasionally saved by this plan; but, on the other hand, the risk of opening up veins and causing pyæmia appears to be distinctly increased, and many surgeons on this account have abandoned it." In *Heath's Dictionary of Surgery*, and many other works, the subject is not even alluded to.

Amidst all this scepticism regarding the value of this method of treatment, as well as the nervousness which appears to exist concerning it, it is encouraging to find Mr. Rushton Parker again come forward as its champion. In an article on this subject in the *British Medical Journal* for November 26th, 1898, Mr. Parker states that further experience of the operation has

served to confirm the views expressed by him in former years regarding the benefits of this method of treatment.

We would here incidentally draw attention to the fact that Mr. Parker appears to have met with only five cases of carbuncle, in the course of as many years, showing the comparative rarity of the disease in England. In this country the disease is very much more common, and cases may at any time be seen in the wards of all the large hospitals. Indian surgeons with greater experience of the disease have not shown the same reluctance as their English brethren to adopt radical methods of treatment; on the contrary, we believe that excision or erosion is the routine procedure in this country.

The great advantage of the radical method of treatment lies in the immediate relief which it affords to the patient. There are very few cases in which there is not almost immediate relief from pain. The fever also quickly subsides, and the patient is rapidly restored to a state of comfort.

Ask a patient, says Mr. Parker, the day after extirpation what he thinks of it, and he replies. "I feel no pain whatever, only a little weak;" "I feel as if a load had been taken off me." It is not only from pain the patient is relieved so quickly, but also from the symptoms of septic absorption. Another surgeon writing on this subject says: "It is hard to realize that a patient so deeply in the throes of septicæmia can be restored to his normal state in such a short space of time." The effect of this method of treatment is so remarkable, that no surgeon who has had experience of it, is likely to abandon it unless some good reason can be shown for condemning it.

Mr. Hutchinson, the author of the article on Carbuncle, in *Treves' System of Surgery* bases his objection to the operation on the assumption that there is "a risk of opening up veins and causing pyæmia." Such accidents may have happened in the old pre-antiseptic period, but are hardly likely to occur in the present day. With ordinary care, the risk of such a complication must be so small, that it may well be ignored in the face of the diminished risks ensured by the operation of excision. As already stated, we believe that excision or erosion have been the favourite methods of treatment in India for many years past, and yet no such fatalities as Mr. Hutchinson dreads have been recorded.

Excellent as this method of treatment is, it is not universally applicable. There are a certain proportion of cases in which less radical methods of treatment must be followed. Cases in which the carbuncle is very large and the patient very debilitated are obviously unsuited to this treatment, which would in such instances be followed by serious shock. Generally speaking, and for the same reason, cases of diabetic carbuncle must be treated by simpler methods. In such cases the surgeon usually has no option. In some cases of diabetes, when the disease is in its initial stage, and the general health has not suffered to a marked extent, the operation may be performed with benefit to the patient.

LONDON LETTER.

INDIAN HOSPITAL REPORTS—ANCIENT AND MODERN.

I HAVE recently had occasion to study a large batch of reports of hospitals and dispensaries for the year 1897, pertaining to nearly every province of the Indian Empire. Having at one time had to compile and read great numbers of these reports, I am in a position to compare the merits of those of the present day with the features of similar compilations prepared and issued about a quarter of a century ago. The first thing that strikes one is the great reduction of their bulk. This has resulted from the introduction of the system of triennial reports with intermediate issue of annual tabular statements with brief comments. The reports for 1897 are of the intermediate class; but they nevertheless furnish all the information that is desirable regarding the number and class of institutions, the attendance of patients, the number and kind of diseases treated and operations performed, and the finances of each. The brief comments by the administrative officer and orders thereon by the Government bring into prominence matters of interest which the experience of the year has revealed and give opportunity of awarding praise or blame, criticising management and emphasising matters tending to promote efficiency and popularity. Thus current record, attention and improvement are secured with saving of time and labour expended on arithmetical material. The next point which deserves mention and commendation is the uniformity of construction which greatly

facilitates digestion and comparison of these reports. I well remember the multiplicity and diversity of the earlier returns and the efforts, *quorum magna pars fui*, which were made to reduce them to harmony and brevity.

DEFECTS OF SURGICAL SECTION.

There is one, however, which still requires revision, namely, Statement IIIA, relating to surgical operations. Trivial things are introduced into this table which hardly deserve the name, such as passing catheters, removing wax from the external ear, hypodermic injections, etc. In different reports practice is different as regards these, and this of course vitiates comparison of total and death rates. But even as regards real and important operations defects exist. Thus no distinction is made between malignant and non-malignant tumours; in some reports operations for scrotal and labial elephantiasis are included among tumours, in others not; in some reports operations for the radical cure of hernia are slumped with other hernia operations; in others they are known separately, and so on. This statement requires careful revision, and it would be well if in compiling it attention were paid in one province to the practice pursued in others. Another feature observable is the omission of detailed or condensed reports of individual institutions and of purely professional matters such as particulars of medical and surgical cases or classes of cases. As regards the former, such information may be locally interesting and useful, but it simply burdens and lengthens a provincial report without benefit to anyone; and as regards professional records, medical journals and societies are the proper place for promulgating these ill-administrative reports; they are simply buried out of sight.

INSPECTION OF DISPENSARIES.

There is one matter of great importance which is referred to in the report of Bengal dispensaries, namely, the method of inspecting these. It is suggested that the inspecting officer should watch the officer-in-charge at his work and thus judge of his competence and care in diagnosing and treating cases. This is the real way of ascertaining how the work is done, and the mere scrutiny of books and forms, mustering of establishment and examination of medicines and instruments, can never elicit the truth as regards the amount of good which the institution is accomplishing. It is the old story of dealing

with symbols, rather than things which is the special temptation and bane of all Indian work. I am at present reading a delightful book—the life of John Nicholson by Captain Lionel J. Trotter. The story of how ‘Nikalsain’ reduced the lawless and turbulent tribes of Bunnú to subjection and order is graphically told. The secret lay in the exercise of personal influence founded on personal inquiry. “The sound of his horse’s hoofs was heard from the Attock to the Khaibar.”

NEED FOR MEDICAL SOCIETIES IN INDIA.

*Apr*opos of Medical Societies, I regret very much to observe the absence from your pages of the proceedings of the Calcutta Medical Society, and can only conclude from that circumstance that it is in a state of suspended animation or actually defunct. This is a matter of extreme regret to me, as I attach a very high value to such societies as a means of promoting the cultivation and diffusion of medical science, raising the tone of the profession and creating kindly feeling and intercourse among its members. I can hardly believe that in the metropolis of India, with its numerous large and well-appointed hospitals furnishing abundant clinical material, its important Medical College and school, its large staff of capable men engaged in these institutions in observing and treating disease—not a few in teaching—its numerous intelligent, gifted and skilled medical practitioners, most of them pupils, licentiates or graduates, there does not exist the making of a most active and useful medical society. It only needs a little energy and perseverance on the part of leaders in medicine—official and non-official—to stimulate the old society to renewed and more vigorous and prolonged and fruitful life, or if it is thought better to start a new organization on fresh lines—say as a branch of the British Medical Association. The Calcutta Medical Society did some good work in its day in a quiet fashion, and its revival or the appearance of a new avator of the spirit which inspired its operations would be eminently desirable.

The fact is that, in these days, medical science moves and changes so rapidly in theory and practice that it is incumbent on those who belong to the medical guild to associate themselves together in some way for the purpose of keeping pace with the advances in the mysteries of their craft. In London this necessity has

quite recently assumed a new form. A “Medical Graduates’ College and Polyclinic” has been organised in order to “increase the facilities offered to medical men for acquiring technical skill, and advancing their scientific and clinical knowledge.” To this end the following arrangements have been projected:—

“Commodious and central premises have been secured at 22, Chenies Street, Gower Street, London, W.C., where the following Departments will be organized:—

I. *A Central Office*, where information relating to educational opportunities in the United Kingdom will be obtainable. In connection with this office a Journal will be prepared, giving detailed information as to the hours of attendance at different hospitals, operation days and operations in prospect, clinical lectures, and such other matters as are likely to be useful to medical graduates. The Journal will also contain a programme of the current work of the College and Polyclinic.

II. *Clinical Demonstrations*.—These will take place daily in the afternoon. Although the demonstrations will be concerned chiefly with cases of exceptional interest, it is not intended to deal exclusively with rare diseases. In connection with these demonstrations, clinical assistants will be appointed and careful records preserved.

III. *Clinical Lectures*.—Lectures on special subjects and cases will, with the sanction of the Council, be delivered at the College at stated times.

IV. *Courses of Lectures*.—Lecturers will be appointed from time to time, who will give short courses of systematic lectures on special subjects, such, for instance, as:—The physical examination of the heart, lungs, abdominal and pelvic organs; diseases of the nervous system skin, eye, ear, nose, throat, and larynx; gynaecology, and obstetrics; tropical diseases; the administration of anæsthetics, &c. Special arrangements will be made for the teaching of bacteriology. Surgical and medical instruments, the Röntgen rays, and the operations of surgery will be demonstrated.

V. *A Clinical and Pathological Laboratory*.—In this laboratory opportunities will be afforded for the acquisition of practical experience in all departments of pathological work.

VI. *A Museum and Library.*—The Museum will not be specially pathological, but will contain chiefly objects of clinical and practical interest, such as drawings, models, surgical instruments and appliances, instruments of research and apparatus for demonstration. The Library will be fitted up so as to serve as a reading-room and place of resort."

It will be observed that this movement is an advance on, and a development of the system of post-graduate instruction, which has long been in existence in the chief medical centres on the Continent, and for some years in the principal medical centres of the country. By means of the new college it is sought to place at the disposal of the medical practitioner all that is best and newest in the doctrines taught in the schools and method pursued in the hospitals.

IS MEDICAL ENTHUSIASM DECADENT IN CALCUTTA?

That Calcutta should be devoid of any instrument or agency of post-graduate instruction—even of that elementary and casual stimulus and outlet to observation and study, to the acquisition and dissemination of knowledge, which is supplied by association in a medical society, is not right. The absence of this sort of enterprise is a sign of stagnation, if not of decadence. I would, therefore, earnestly urge upon medical men of every race, office or degree to be up and doing in the matter, and to band themselves together for mutual improvement. I know no better nucleus of a medical society in Calcutta than the Medical College, and no fitter promoters and sustainers of such than the able men who officer the large Calcutta hospitals. There are, and always have been, difficulties in keeping a medical society going in Calcutta; but they will yield to energy and sustained enthusiasm.

A SUBJECT FOR RESEARCH.

Those who have read Dr. Patrick Manson's work on tropical diseases, will have noticed a Chapter XXIX on a disease to which the name of "ulcerative granuloma of the pudenda" has been given. The observations on which the description was founded were made in British Guiana. Cases of the disease have been since the publication of Manson's work recorded by Maitland and Williams in your pages. The condition is one of which I have seen several examples in the Medical College Hospital; and in the issue

of this Journal for the year 1882 (p. 121). I recorded short notes of two cases under the name of "serpiginous ulceration of the genitals." Pathologically the disease presents the feature of lupus; but there is good reason to believe that it is of venereal origin. On the subjects of causation and pathology additional information is much wanted, as well as on the questions of geographical distribution and frequency. This is a matter which might very profitably engage the attention of the Calcutta Medical Society if I am wrong in assuming that it has ceased to exist.

INFLUENZA EPIDEMIC.

With a spell of cold easterly winds, and pretty severe frosts there has been in this country a considerable revival of influenza which has caused a rise in the general mortality and proved as usual very trying to persons advanced in years. The disease has been severely felt in London. The latest return shows a death-rate of 22.1 per 1,000, the death from influenza numbering 97 against 113, 74, 50 and 22 in the four preceding weeks, reading backwards. It is not in the metropolis alone that the outbreak has been felt. It seems simultaneously to have made its appearance all over the country. It looks as if the microbe giving rise to it were ubiquitous, ready to be roused into activity by favouring meteorological conditions. No doubt much of what goes by the name of influenza is not true influenza, but "cold" in its multiform manifestation; still experience, personal and otherwise, makes it easy to draw the line between the effects of a depressed temperature and the results of specific infection by the influenza germ. The severe and persistent depression of the nervous system which is present, whatever the form or type of the case may be, is probably the best diagnostic; but there are other means of differentiation. Take for example the pulmonary cases. The true influenza lesion, whether congestive or hepatising, is lobular and successive; one patch clearing while another is undergoing acute change: and withal the temperature is maintained at a very high level and there is a constant tendency to cardiac depression and failure.

ITS VICTIMS.

This is the nature of the illness which has recently laid Rudyard Kipling prostrate and centred the world's concern around his sick-

bed. Several persons of note have recently succumbed to this type of the disease in this country. Among them I may mention F. N. Macnamara, who retired from the Indian Medical Service many years ago, after having with great credit and success held the appointment of Professor of Chemistry and Chemical Examiner in the Calcutta Medical College and became very successful and popular as a practitioner. Since his retirement, Dr. Macnamara has been Examiner of Medical Stores at the India office—a position in which his special knowledge and the experience which he gained in India were of great advantage to Government and the medical services. Dr. Macnamara was a man of great ability, well cultivated mind, sound judgment, and amiable disposition. He made a very careful study of Indian waters and wrote a book on the physical geography, climate and diseases of the Himalayan and Sub-Himalayan regions, with particular reference to the prevalence and causation of goitre.

Another victim of influenza is Professor William Rutherford of Edinburgh, a man of striking personality, a great teacher of physiology, and a keen industrious student and investigator. He possessed the faculty of oral exposition in an eminent degree, and constituted in himself and his manner a telling proof of the power of lecturing, which is apt to be discredited in these days. No doubt, he combined with the gift of eloquent language the great gift of demonstration, by pencil and specimen and experiment, and he thus combined in happy excellence all that makes oral instruction interesting, attractive and useful. Sir John Struthers, who died about the same time, was also a highly successful teacher for similar reasons. Many Edinburgh and Aberdeen men, into whose life he introduced some of his own rare enthusiasm and love of work, will have received tidings of his death with sincere regret.

THE LATEST SERVICE EXAMINATIONS.

The recent examination for the Royal Army Medical Corps and the Indian Medical Service have been successful in filling all the advertised vacancies in both. Judging by the marks obtained, the quality of candidates has been up to the standard of recent years. The Indian Medical Service maintains its pre-eminence in the competition, and, notwithstanding all that has been said and written regarding its deterioration, continues to attract good men. The

following figures, showing the marks obtained by the first and last man of the R. A. M. C. and I. M. S., respectively, at the last four London examinations, are interesting:—

	Aug. '97.	Feb. '98.	Aug. '98.	Feb. '99.
R. A. M. C.	2933-1800 ...	2775-1943	2602-1965	2393-1846
I. M. S.	3142-2500 ...	3470-2721	3179-2274	3457-2295

THE R. A. M. C.

It is an open secret that the R. A. M. C. is still far below its normal strength, and the estimates have made provision for eighteen new officers in view of the augmentation of the Army. It is therefore possible that men may be admitted by nomination in addition to those selected by competition as happened in August last. The nominations were made by the schools, and the men thus selected proved by the results of the examination at the close of the Netley course to be quite equal to those who had been admitted by competitive examination.

THE BRITISH MEDICAL ASSOCIATION.

The autumn meeting of the British Medical Association is to take place this year at Portsmouth. There is to be, as at the Edinburgh meeting, a special section for the discussion of tropical diseases. I hope that Indian men who happen to be in England on furlough will make a point of attending the meeting and supporting the section by their presence and co-operation. Great preparations are being made locally for the convenience, entertainment and enjoyment of visitors. The Solent is at that time of year at its best, and there are many places of beauty and interest within easy and cheap access from Portsmouth. The meeting will take place during the "Cowes Week," when all that is fashionable and attractive in yachting and yacht-racing is in evidence.

9th March, 1899.

K. McL.

Current Topics.

THE JIGGER PEST.

WITH reference to this troublesome African insect and its ravages, which are described on another page, the Government of Bombay are endeavouring to prevent its importation from British East Africa into India, and have issued a resolution on this subject. The resolution contains a letter from Captain Kilkelly, I.M.S., who had charge of the 4th Bombay Infantry when that corps was in East Africa. He says he has no reason to doubt the probability that the insect will establish itself in India and emphasises

the importance of taking steps to prevent its importation and limit its spread if it obtains a foothold. The Surgeon-General makes the following suggestions, which Government have adopted :—Periodical inspection and careful treatment of all Indian coolies employed by Government in British East Africa or in other parts of the Continent having direct communication with Indian ports. Medical inspection of all persons leaving East African ports for India and the prohibition of embarkation for India of those suffering from jigger. Medical examination on boardship of passengers for India with the object of detecting cases infected shortly before embarkation and which may have developed on voyage; careful medical inspection at port of disembarkation in India of arrivals from Africa and detention for treatment of all cases of jigger, in which the parasite had not already been extracted or destroyed.

PALPITATION AND MARCHING.

SOME interesting contributions to Military Surgery and Medicine are given in the Appendix to a recent Army Medical Report. On disordered action of the heart among young soldiers in India, Surgeon-Captain J. B. Wilson, M.D., A.M.S., alludes chiefly to palpitation and points out that this is a very prominent and serious cause of inefficiency. Its origin he attributes to setting-up drill, inordinate use of tobacco, and excessive heat and malaria on young soldiers of indifferent physique.

Marching, and its place in the training of the soldier, by Surgeon-Captain Austin, A.M.S. The writer affirms, what is probably the truth, that our troops are not equal to the troops of European countries in their powers of making long and rapid marches. He attributes this in part to the age of our recruits. These should be eighteen years of age, but probably a large percentage of them are considerably under this, for so long as they fulfil the physical conditions, their age is not very closely inquired into, nor, if inquired into, easily verified. These boys are put to do the work of trained men, and on a ration which may be enough for a man who has built up his frame, but is not enough under the circumstances for a growing lad. Surgeon-Captain Austin gives other and good reasons for the want of marching power in our troops, but the pith of them appears to lie in the above statement.

HYGIENE ON RAILWAYS.

THE Imperial Health Office has recently issued instructions with a view to prevent the spread of disease by railway traffic, and which might very well be adopted on Indian railways, especially in time of plague. The regulations are especially intended for the lines leading

to and from health resorts, which tuberculous patients are in the habit of visiting. It is recommended that the sides of the sleeping-cars of these lines should be as smooth as possible and without corner, so that they may be easily cleaned. Velvet should not be used for the cushions, which, moreover, should be capable of being easily removed for the purpose of disinfection. Every compartment ought to be provided with covered spittoons. The floors of the waiting-rooms in the stations ought to be washed every day and the walls frequently. The walls are to be painted with oil paint which can be frequently washed. When new premises are to be constructed, special attention must be paid to matters of hygiene. The Minister of Public Works, who has the control of the railways, has communicated these recommendations of the Health Office to the railway authorities and has ordered them to be adopted.

GASTRIC ORIGIN OF RICKETS.

A FRENCH observer claims that rickets in children is due to abnormal conditions of digestion; that the secreting function is extremely defective, as well as the quality of the secretions; and that there is especially a lack of free hydrochloric acid. The organism suffers from the want of properly digested nourishment, and the stomach is the seat of abnormal organic ferments generating acids, principally lactic acid, which affect the bony tissues unfavourably, especially as respect the phosphates.

POISONOUS FLANNELETTE.

SOME kinds of flannelette are well known to be highly inflammable, and to counteract this defect it appears that some manufacturers have recently been saturating the flannelette with chloride of zinc, a deliquescent salt, which thus keeps the material always moist. In one analysis made of flannelette thus treated, it was found that as much as 23·12 per cent. of chloride of zinc and 7·88 per cent. of water was present. Chloride of zinc, however, is not only deliquescent but has also an irritant effect on the skin, and material containing it in such quantity when worn next the surface of the body must excite a certain amount of dermatitis and possibly some superficial ulceration. This form of adulteration is thus injurious in several ways, and it would be well to avoid any flannelette which gives the sensation of being damp.

NEW POISON REGULATIONS.

THE Privy Council, on the requisition of the London Pharmaceutical Society, has adopted the following regulation for the guidance of druggists in England in regard to the storing of poisons :—

"1. That in the keeping of poisons, each bottle, vessel, box, or package containing a poison be

labelled with the name of the article, and also with some distinctive mark indicating that it contains poison.

"2. Also that in the keeping of poisons, each poison be kept on one or other of the following systems, viz.:—

"(a) In a bottle or vessel tied over, capped, locked, or otherwise secured in a manner different from that in which bottles or vessels containing ordinary articles are secured in the same warehouse, shop, or dispensary; or

"(b) In a bottle or vessel rendered distinguishable by touch from the bottles or vessels in which ordinary articles are kept in the same warehouse, shop, or dispensary; or

"(c) In a bottle, vessel, box or package kept in a room or cupboard set apart for dangerous articles.

"3. That in the dispensing and selling of poisons, all liniments, embrocations, and lotions containing poison be sent out in bottles rendered distinguishable by touch from ordinary medicine bottles, and that there also be affixed to each such bottle (in addition to the name of the article, and to any particular instructions for its use) a label giving notice that the contents of the bottle are not to be taken internally."

EXERCISE AND OVER-EXERCISE.

"DR. LAUDER BRUNTON opened the session of the York Medical Society," says the *British Medical Journal*, "by an address on exercise and over-exercise, in which, as was to be expected, he said a good many wise things with which every physician will agree. He said, for instance, that exercise which put into action every muscle of the body, but did not put any one into action for too great a length of time at once, or in too violent a manner, was exceedingly beneficial, but in applying this excellent principle he had the temerity to compare unfavourably with lawn tennis, the three most popular physical recreations of the day—cricket, golf, and cycling. Moreover, he classed together croquet, cricket, and golf—rather a curious collocation—on the ground that in playing them there was not the same general movement of the whole body that was necessary in lawn tennis or polo. As to croquet, all will probably be ready to agree, but as to cricket and golf, it is not likely that their devotees will be disposed to accept Dr. Brunton's rather sweeping assertion. What muscles of the body are brought into play in lawn tennis which are not brought into play by, say, a fast bowler, we should be rather curious to know; and as to golf, the distribution of the stiffness after a day's play in a man out of condition and practice leads at least to the suspicion that very few muscles in the body have not been called into action. As to cycling, Dr. Lauder Brunton said that it tended to

narrow the chest and to cause more or less a permanent stoop. He added that, as it had become so very general an amusement, its effect on the body, as compared with those of other physical exercises, must be very carefully watched. Like most of us, Dr. Brunton has been struck by the fact that the girl of the period tends to be most divinely tall, and he seems disposed to put this down to the great popularity of lawn tennis a few years ago. It is certainly a pity that this very excellent game appears to be going out of fashion owing to the great popularity of cycling, which we should be disposed to agree with Dr. Brunton is not an exercise so well calculated to produce an all-round development of the muscular system. Although he spoke in faint praise of cricket and golf, he admitted that they shared with tennis one essential feature of a good game—intermittent action of many groups of muscles. Passing on to speak of over-exercise, he observed that what was sufficient exercise for the muscles might be over-exercise for the heart, so that schoolboys ran a risk of injury if their athletic power were judged from their apparent size and strength, and not according to the strength of the heart. Dr. Brunton then pointed out that a continuous strain upon one set of muscles was not only painful and exhausting but injurious, and illustrated this point very happily by referring to the fatigue experienced by men and women employed in shops, who were compelled by custom to stand for many hours a day. He showed a rest, by means of which a shopwoman could sit down and take the weight of the body off the legs, whilst movements behind the counter were hardly interfered with. The cause of the quickened breathing associated with muscular exertion was really the poisonous products formed by muscular action, and the shortness of breath was due to heart disturbance. Thus, in the case of growing boys, football or paper-chases might lead to distinct heart strain. Another factor which Dr. Brunton said must be regarded in exercises for boys and young men was that mental fatigue caused bodily exhaustion. If boys were pushed both at lessons and at exercises they were much more likely to break down than if they were pushed at one or the other alone. In adolescence the heart, like other muscles, though it was more easily strained, recovered more readily, and with moderate care would recover completely. In conclusion, Dr. Brunton dwelt on the important point that, while in middle life the heart was less liable to strain, yet as age advanced, and especially if the arteries became atheromatous, the heart was not only more easily affected by strain, but had less power of recovery—a fact which has its obvious bearing on the kind and amount of exercise which should be taken as age advances."

HYGIENIC MAXIMS.

AMONGST 500 competitors; Dr. Decornet, of Ferté-sur-Aube, has been proclaimed the winner of the prize which was offered by the publishing firm of Messrs. Hachette et Cie in their "Annual Almanack" for 1897. The candidates were required to state briefly under ten heads the most effectual rules for preserving health, mental and bodily. The following are Dr. Decornet's 10 maxims:—1. General Hygiene: Rise early, go to bed early, and in the meantime keep yourself occupied. 2. Respiratory Hygiene: Water and bread sustain life, but pure air and sunlight are indispensable for health. 3. Gastro-intestinal Hygiene: Frugality and sobriety are the best elixir for a long life. 4. Epidermal Hygiene: Cleanliness preserves from rust; the best kept machines last longest. 5. Sleep Hygiene: A sufficiency of rest repairs and strengthens; too much rest weakens and makes soft. 6. Clothes Hygiene: He is well clothed who keeps his body sufficiently warm, safeguarding it from all abrupt changes of temperature, while at the same time maintaining perfect freedom of motion. 7. House Hygiene: A house that is clean and cheerful makes a happy home. 8. Moral Hygiene: The mind repes and resumes its edge by means of relaxation and amusement, but excess opens the door to the passions and these attract the vices. 9. Intellectual Hygiene: Gaiety conduces to love of life and love of life is the half of health; on the other hand, sadness and gloom help on old age. 10 Professional Hygiene: Is it your brain that feeds you? Don't allow your arms and your legs to become ankylosed. Dig for a livelihood, but don't omit to burnish your intellect and elevate your thoughts.

"SKIAGRAPHY," "RADIOGRAPHY, OR
"AKTINOGRAPHY"

THE coining of words on a Græco-Latin basis for scientific purposes is an absolute necessity now that works on science are written in several different languages. Their use is not a sign of pedantry; on the contrary, the affectation of "Anglo-Saxon" terms such as "voice-box" (which is not Anglo-Saxon) for "larynx" is essentially pedantic, and increases difficulties which it professes to obviate. Still, as the *British Medical Journal* points out, it is clear that a scientific term should be made thoroughly international. This is not always the case, as the words "potassium" and "kalium" testify. Our contemporary, the *Chronique Médicale*, justly complains that Roentgen's new photography and photographs are termed "skia-graphy" and "skigram" in English, "radio-graphie" and "radiogramme" in French, and "aktinographie" and "aktinogram" in German. Further regret is expressed that Professor Roentgen himself did not supply precise

and definite terms, which would undoubtedly have been adopted in all languages.

SMALL-POX IN RANGOON.

DURING the month of February there were over 1,100 cases reported to the Rangoon Municipality, of which number 620 were fatal; less than half the figures quoted were treated in the hospitals. Since the beginning of the current year, over 1,200 cases of small-pox have been treated in the hospitals at Rangoon; and double that number of cases have been treated in private houses in town. Apparently, the epidemic has left the European quarter of Rangoon; but it is spreading with fatal results among the children and adults of the Chinese and Burmese in the Western part of the town. The *Rangoon Gazette* is the authority for the statement that a Burman Government officer, Maubin, wired last week to Dr. Hoyle, the Civil Surgeon of Vaccination, as he termed him, in the following terms: "Please send sharp a cask of vaccine lymph." Apparently he wants to vaccinate all Asia "sharp."

CAVENDISH.

THE author so widely known as "Cavendish," in private life Mr. Henry Jones, whose death took place a few weeks since, was, say the Medical Press, himself a medical man, and the son of Mr. Henry W. Jones, also a medical practitioner, of Soho Square. Mr. Henry Jones took his M.R.C.S. in 1852, and subsequently became a member of the Society of Apothecaries. He ceased to practise in 1869, but had long before achieved the position of an unquestionable authority in all matters appertaining to card-playing. His numerous works, all written under the *nom de plume* "Cavendish," still hold their own in all English-speaking countries. It is a curious fact that his father, who was very fond of a rubber at whist, acquired the habit of settling disputes by referring to "Cavendish," years before he became aware that the author was his own son.

SOLDIERS' DRESS.

IT having been brought to notice in the Punjab Command that the khaki clothing worn by British troops is not made sufficiently loose and roomy, the khaki trousers in particular being frequently made so tight over the thigh and seat as to seriously hamper the movements of the men when at drill, especially on a hill side, and that their boots are not kept sufficiently pliant and soft for the purpose of marching, Officers Commanding British Corps and Batteries have been directed to give their attention to the following instructions:—(i) The trousers should be made as comfortable and loose-fitting over the parts indicated as is consistent with a smart appearance, and the coats

should be so made as to be large enough to admit of warm clothing being worn underneath; special care being taken in regiments of British Infantry to have the coats made easy at the throat; and thus obviate the necessity of men unhooking and unbuttoning them when climbing a hill; and (ii) in view of the dry climate of the Punjab, and in order that the buff leather accoutrements and boots may be kept in good and serviceable condition at all times, directions have been given that all leather accoutrements, except buff belts, should be periodically moistened with dubbing, especially during the hot weather; and that in the case of boots they should be well soaked with castor oil on being issued to the men.

INFECTIOUS DISEASE IN CANTONMENTS.

A NOTIFICATION appears in a recent *Gazette of India*, adding a rule under the Cantonments Act, by which certain persons are required to give information of infectious or contagious disorders within cantonment lines.

Medical practitioners, owners of houses, and persons attending those suffering from disease, are instanced as those who must furnish information. The rule will not apply to cases of venereal disease, when the patient is under specific and adequate treatment, and by reason of habits, conditions of life and of residence is unlikely to spread the disease. Failure to report, or the furnishing of false information, will involve a fine up to Rs. 50. The new rule, we believe, has been framed on the model of the regulations enforced in Norway and Sweden.

KANTHACK SUBSCRIPTION FUND.

THE late talented Professor of Pathology at Cambridge, who must have been personally known to many of our readers in connection with his visit to this country, has by his enthusiastic devotion to the study of disease left his widow and family very badly off financially. An appeal is being made on the behalf of the latter for funds, by Dr. J. H. Drysdale, 25, Welbeck Street, London, W., who will gladly acknowledge all contributions for this deserving object.

Reviews.

The American Year-Book of Medicine and Surgery.—Illustrated. Edited by GEORGE M. GOULD, M.D. W. B. Saunders, Philadelphia, U. S. A., pp. 1200. Price \$ 6.50. 1898.

THIS magnificent work, of over one thousand pages, has been prepared under the able editorship of Dr. G. M. Gould, assisted by a staff of specialists selected from the foremost members of the Medical Profession in America. It is impossible, within the limits of a short review, to do justice to the merits of this undertaking,

brilliant alike, in conception and execution. We know of no book with similar aims which will compare with it. Our own *Year-Book* and *Medical Annual*, good as they are and handy for reference, are as the rush-light to the arc lamp when tested by the standard of this work.

The general plan of the book is somewhat similar to that of other year-books, but it is much more thoroughly elaborated. Each division commences with a *general summary of the year's work*, in that particular direction, and this is followed in turn by summaries of all the more important papers, dealing with the particular diseases, etc., included in this division, which have appeared in medical journals and transactions throughout the world during the preceding one or two years—in this case, 1896 and 1897. Where necessary, an editorial commentary in elucidation of the article summarised is attached. The summaries themselves are mostly of sufficient length and clearness to obviate any necessity for reference to the original articles. Amongst a mass of material we have selected a few items of special interest.

Typhoid fever is dealt with in all its aspects. The good results of cold-water treatment are emphasised, and a special and most complete table is given of the *results of the Widal test* by observers from all parts of Europe and America. The table shews that, of 3500 applications of the test by competent observers, a positive reaction was obtained in 95.5% of typhoid cases, whilst there was no reaction in 98.4% of non-typhoid cases. It is clearly demonstrated, also, that the apparent failure of the test is almost invariably due to faulty methods or to errors in the clinical history.

Short summaries of recent work, Indian and otherwise, in relation to plague and cholera are given. Malaria is fully treated and much of the greatest interest is recorded. Hehir's assertion that he has found the organism of malaria in marsh water is mentioned, with the editorial note that "unfortunately no details are given of the appearance of the organism as found outside the body," an omission which doubtless received the attention of all who read the original article.

Under *Anæsthesia and Anæsthetics* several articles of great interest are summarised, notably those of Hewitt, Treves and Sheild in the *Practitioner* for October, 1896. In Hewitt's article, which strikes us as being specially able and impartial, it is pointed out that the practice of administering the same anæsthetic without regarding the nature of the operation or the type of the subject is a thing of the past. [?] Successful administrators vary their anæsthetics and the mode of giving them according to the circumstances of each case. Modern surgery requires that all the patients shall be saved, but it may be required that one patient be absolutely immobile, that another be less

deeply anæsthetised, and that a third be very slightly under the anæsthetic. A very important development in the modern knowledge of the subject is the recognition of the advantage of profound anæsthesia over light anæsthesia in most instances. * * * Experience has taught us that, within certain limits, the state by the patient's heart may be entirely disregarded. * * * The truth of the matter is that patients with strong hearts are more liable to pass suddenly into a dangerous condition than those with feebler circulation. The advisability of commencing with ether or with A. C. E. mixture and continuing with chloroform is evidenced as something new; but we remember the late Professor Rutherford of Edinburgh insisting on this about twenty years ago. In the editorial remarks, special stress is laid upon the frequency with which surgeons pick out the less competent person to give the anæsthetic and the more competent to assist at the operation. "To ask a person to give an anæsthetic should be considered an evidence of confidence, not of disdain."

In reference to the leading article, published recently in the *Indian Medical Gazette* on the radical cure of hernia, it is interesting to note that the book under review gives a very full account of the most modern developments in this direction. Two important papers, by De Garmo and Coley, are specially worthy of notice. The former writer lays great stress on the importance of ascertaining, before operation on the male, whether a urethral discharge exists, and if so, of curing this before attempting to operate. Personally, we must confess to belonging to the rank of the sceptics regarding the value of radical cure; but after reading the papers quoted in this volume we are more than half converted to the opposite view. Says the Editor: "Coley's study and DeGarmo's paper constitute an absolute answer to those who do not believe in the radical operation. Such a low mortality speaks for itself." Coley operated on 360 cases with 1 death, due to double pneumonia from ether. He gives a table shewing 300 Bassini operations with 1 death and 3 relapses, 280 of these cases having been carefully traced. Primary union took place in 97% of cases. These results are a great improvement on those obtained even by the best surgeons and under most favourable conditions prior to the present decade.

Under Gynecology we are glad to note that, with reference to a paper by Matweieff on *Bathing during Menstruation*, the Editors write: "The fear of bathing during menstruation is one of the teachings handed down to us for generations, and is purely fictitious. It is, however, so firmly educated into womankind that it will take a generation or two to remove it. There is no reason why any healthy woman should not bathe during menstruation, with proper precautions against subsequent cold. There is no reason why a woman should allow

her person to go unclean at the time of all others it needs cleansing."

Under Nervous and Mental Diseases, an important paper by Alexander Lambert on cases of *Insolation* in New York is referred to. A preliminary report on the changes observed in the nervous system in three fatal cases is included. "Sections were examined from the special cord, cerebellum and various portions of the cerebrum, and all showed more or less pronounced changes in the chromophile plaques of the ganglion-cells. These were sometimes changed in shape and reduced in number; at other times they were broken into fine dust, and in others had entirely disappeared. The nucleus is stained more deeply than normal with methylene-blue, and abnormal spheric granules appear. It is supposed by Van Gieson (who made the examinations) that these conditions show an acute auto-intoxication, and that this may be considered the basis of insolation." The paper is of special interest in the light of Dr. Sambon's attempt to include insolation amongst the so-called microbic diseases.

A paper dealing with a case of *auto-extirpation of the Larynx* by Szigeti, is noted in the division of Legal Medicine. This case of suicide was so remarkable that its possibility could hardly have been entertained had not the circumstances excluded homicide. The suicide was a woman, aged 42, and an illustration is appended showing the injuries inflicted. "A table-knife was used, the first cut being made downward with the head thrown back, the larynx being thus probably grasped by the hand and excised by a series of sawing cuts. Death followed in eight hours. The carotids, jugulars and vagi were intact. One similar case is on record (by Jameson), in which the victim removed half of one side of his larynx and brought it himself to the hospital, where he sought relief."

The book includes sections on Anatomy, Physiology and Physiologic Chemistry, in addition to all the ordinary subjects, and its general style and get-up is beyond criticism. There is an excellent index at the end. It only remains to say that we have rarely seen a book which appears to us to be so nearly indispensable to the library of every medical institution and of every medical man who wishes to keep himself *au fait* with any or every branch of his profession.

The Sanitation of British Troops in India.—

By E. CARRICK FREEMAN, Captain, R.A.M.C. London: REBMAN PUBLISHING Co. Pp. 106. 2s. 1899.

THIS little book is intended to assist the newly arrived military medical officer in his sanitary inspections in India, and also to interest and instruct non-medical military readers in the sanitary precautions requisite for the preservation of the health of British troops in India.

This latter object is all the more necessary as "the military medical officer has advisory functions only, actual sanitation being in the hands of the Royal Engineers and the Quartermaster-General's Department. He has no statutory powers behind him like the Medical Officer of Health, and it is only by securing the willing co-operation of those in authority, and by educating public opinion that he can hope to see his sanitary ideas carried out.....The military mind has, too, a strong and intensely conservative bias, and the fact that any system or arrangement has been in use for a long time is considered a strong argument for its retention, however unfortunate may have been its results."

Captain Freeman's book admirably fulfils this double object. It is written in a simple forcible style, and although primarily intended for military readers, it gives much sound information on practical points which civilian householders all over India too frequently neglect to their cost. For instance, his remarks on the dangers of infection through that walking hot-bed of germs—the sweeper, and the *bhisti's masak*—and on the hygiene of the cook-house, direct attention to some of the commonest and most widespread insanitary practices which undoubtedly cause a large proportion of the preventible disease and deaths in India.

As regards the cook-house, "a crowd of native servants and hangers-on practically live on the premises under no supervision whatever, and there is no check on sweeper or *bhisti*. The cook also by his partiality for producing creams, blanc-manges and jellies, provides, as Hawkin has shown, what are practically 'nutrient media' for any pathogenic germs which may happen to be present." It is very properly insisted on that the cook-house should be swept out by the cook or his assistant, with a specially clean broom and that the dish-cloths or '*jharans*' should be specially preserved from the risk of infection. "For this purpose they should be issued to the cooks twice a week in sufficient numbers, and the dirty ones boiled in the kitchen and hung up to dry in the sun. This is a much safer procedure than handing them over to the *dhobi*." And into the dairy "no sweeper must on any account ever enter the room."

Indeed, as our author states, it may be safely asserted as a general principle that the fewer native servants employed in domestic arrangements the less likelihood there will be of an outbreak of infectious disease.

A Manual of Modern Surgery: General and Operative.—By J. C. DACOSTA, M.D. 2nd Edition, with 386 Illustrations. Philadelphia: W. B. SAUNDERS. 8vo. Pp. 900. \$4. 1898.

THIS manual fairly well justifies its title. It is up to date and adapted to the wants of the busy general practitioner and the modern student of surgery. It stands between the

cumbrous surgical text-books and the incomplete 'outlines' or compendiums, and is eminently practical throughout.

The opening chapter is rightly devoted to bacteriology, because without some knowledge of the vital principles of this branch of science the vast importance of its truths will not be fully appreciated, and, as a consequence, there will inevitably be failure in the application of aseptic methods. This subject naturally leads on to the subjects of sepsis and the relative values and advantages of the various antiseptics, and the disinfecting of the operator's hands and instruments—subjects on which English text-books are woefully behind-hand.

The various operations and recent advances in surgery are described in clear and concise terms, and freely illustrated with diagrams and drawings though some of the latter are rather crude. There is also a chapter on the use of the Röntgen Rays in modern surgery.

As regards litholopaxy the author refers to Lieutenant-Colonel Keegan's operations in male children, which were first published in our pages. While admitting the safety and desirability of this operation in such skilled hands as Dr. Keegan's, he nevertheless advises caution in the performance of this operation in children, especially as the results of lateral lithotomy in such cases are so favourable. The elder Gross in 72 of the latter cases had only 2 deaths or a percentage of 2·67, whilst Dr. Keegan's mortality in children was 4·3 per cent.

In connection with transfusion, we should like some of our readers who have the opportunity to give this simple operation a trial in that large class of otherwise hopeless cases of collapse from cholera, as this promising treatment has never yet been properly tried in cholera collapse, and it might thus be the means of saving hundreds of lives.

Handbook for Medical Subordinates.—By PANDIT GOPAL DASS, C.M.S., Delhi. 1898.

THIS booklet, written in the vernacular in the Persian character, gives a variety of information likely to be useful to civil hospital-assistants and compounders in jails and hospitals, as for instance, the treatment of patients preparatory to major operations, the materials for surgical operations, a large number of receipts for various conditions, hypodermic medications, antidotes to poisons, and the chief alterations and addition to the new pharmacopœia.

Traitement des Dermatoses par la petiet
Chirurgie et les Agents Physiques.—Par M. L. BROCCQ, Médecin de l'Hôpital Broca-Pascal. Paris: MM. GEORGES CARRE ET C. NAUD, Editeurs. 1898. Pp. 285. 20 illustrations.

THE scope of this little work is indicated by its title. It consists of a series of lectures given at the Broca-Pascal Hospital in Paris by

Dr. Brocq, selected by Dr. Déhu, and revised by Dr. Brocq himself. It is divided into three portions: the first deals with minor surgery under the headings of indications and methods, anæsthesia, scraping, scarification and actual cautery; the second, entitled Electricity, deals with electrolysis, faradisation (including the use of electric baths) and static electricity. It also contains a chapter on the use of currents of high potential and high frequency, in which prominence is given to the experiments of MM. d'Arsonval and Oudin. The use of X-rays in acne, lupus vulgaris and hypertrichosis is described, and the conclusion arrived at that X-rays are likely to prove of considerable value to the dermatologist. The third part of the work deals with the effects of light and hot air. The experiments of Finson of Copenhagen with coloured light in small-pox and lupus, and of Hollcender of Berlin and Lang of Vienna with hot air in lupus are mentioned. The general plan is in each chapter to give an account of the methods and then of the indications for their use in various diseases. There is no index, but a fairly complete table of contents is placed at the end. The book is a valuable summary of all that is at present known, and should prove very useful to those for whom it is intended.

Current Literature.

MEDICINE.

Guinea-worm.—Major V. Harrington, I.M.S., in an interesting note to the *British Medical Journal* (January 21st, 1899), revives the question of the mode of entry into the human tissues of the *filaria medinensis*. He believes that the dracunculus attains sexual maturity previous to its entry to the human body and that the female penetrates the skin through the pores, develops in the subcutaneous tissues, giving no sign of its presence until near the full time of her gestation. This method of entrance he supports by some very strong evidence, e.g., in a *Whistee* Dr. Harrington extracted 18 worms, 14 of which were in the back and loins along the area in contact with the wet *mussack*; another case is of a sepoy known to have entered a *jheel* which was filaria-infected. The worms in this case appeared in the skin of the part usually covered by the loincloth which he wore while in the pool. Another case was that in which worms appeared in the head and neck in a man known to carry his *gurrah* in that position. Cases like these have been quoted before and appear to me strong evidence in favour of the direct penetration theory, if I could understand that the pores of the skin were open enough for such a passage. The appearance of the worm at such a position is not explained by the theory of the cyclops and drinking water. It would be marvellous if these tissues were specially selected from inside unless the worm wanted to deliberately mislead us!! The same question arises as to the mode of entry of the *bilharzia*, and Sonsino has said that direct entry through the skin is "next door to impossible." Of course on the cyclops theory it would be said that the worm naturally sought the area of the *Whistee's* skin kept wet by the *mussack* just as it is held that she seeks the legs, as

they are most likely to be in water into which she hopes to deposit her young. The question is a pretty one, and at present the cyclops theory holds the field, but we may remember that Sonsino a few years ago believed that the *bilharzia* had an intermediate stage of existence in a fresh water anthropol, but this view has now been given up. (Compare Sonsino's Appendix in Davidson's *Hygiene* of 1894 with Manson's *Tropical Diseases*, p. 501, of 1898.) The same fate may be in store for the cyclops theory. The question admits of experimental proof. Anyone in the Punjab might try the experiment on a monkey, wrapping its leg with filaria-infected water and only giving it pure water to drink. If the monkey does not harbour the filaria any other animal might do.

Oyster Fever.—Dr. J. W. Moore (President, R. C. P. I.) has an interesting article with the above heading (*Practitioner*, March 1899). Sir Charles Cameron, the Health Officer of Dublin, was the first to incriminate the oyster. Since then (1880) several epidemics of typhoid have been attributed to sewage in oysters (vide *British Medical Journal*, January 12th, 1895, and a note by Sir Wm. Broadbent in same issue). The recent (1897-8) report of the Medical Officer of Local Government Board of England affords convincing proof of the part played by sewage-laden oysters in the production of typhoid fever. Dr. Moore believes that oyster-poisoning presents itself under at least three forms. (1) An acute gastro-enteric catarrh; (2) as a specific continued fever which is not typhoid, but probably ptomain-poisoning; and (3) as true typhoid, the poisonous oysters having acted as hosts to Eberth's bacillus. The first type is sudden, nausea, vomiting, purging, &c., the poison either acting peripherally, or centrally on the pneumogastric system. In the second type, elimination of the poison is not complete. Poisonous albumoses are formed from the proteids during the early stage of putrefactive decomposition of the food in the patient's stomach (vide Sidney Martin's article on Ptomain-poisoning; Allbutt's System, vol ii, p. 789); a brisk continued fever supervenes within a few days after eating the toxic oysters; it lasts for a week, 10 or 14 days, with profound depression of mind and body, and may even terminate fatally. (3) The third type is true typhoid. Dr. Moore also gives the case of a cavalry officer in whom all three forms of poisoning followed on eating raw oysters at Mess. Two other officers at the same dinner developed cases of true typhoid.

Non-filarial Chyluria.—Dr. H. T. Bewley (*Dublin Journal of Medical Science*, February 1899) records an interesting case of chyluria, in which repeated search failed to find the filaria. The patient, a female, had lived in the Mauritius, St. Helena and at Hongkong, but had resided in Ireland for the past twenty-two years. The chyluria illness began less than two years ago. The symptoms were the usual ones. The urine contained no sugar and normal amount of urea. The blood was examined at all hours, day and night, for filaria, but none were found. The clots in the urine were examined equally in vain.

The absence of the filaria does not of course prove that the chyluria was not due to this parasite, as after obstruction of the thoracic duct the damage is done, and the worm may live or die. Dr. Bewley's case improved considerably under strychnine and iron.

Hæmoglobinuria in Fever in India.—Some months ago in these columns I ventured to confidently assert that hæmoglobinuria was very rare, almost unknown in India. I still believe it is rare except in the more malarious parts of the country as Assam, Silchar and the Duars. It has never been shown even in cases of *kala-azar*, which (even though, I believe, the worm has its share in the production thereof) are pretty bad examples of intense malaria. I have examined hundreds of times the urine in cases of severe malarial attacks among prisoners. I have found albumen rarely [certainly not in 46 per cent. of cases as Thayer recently states he

found in the malarial fevers of Baltimore (*American Journal of Medical Science*, November 1898)], but never a case of hæmoglobinuria.

Nevertheless men working in other places have reported such cases. A. Powell (*Journal of Tropical Medicine*, December 1898) records eleven cases in Assam, both in Europeans and Natives, and seems to incline towards Koch's views on quinine, views which, as a *Saturday Reviewer* said recently, "have added a new terror to tropical existence." Capt. Maynard, I.M.S., has recently reported a case from the Hazaribagh District in a European. Dr. Baldwin Seal has also met with six cases in the past eight years, all of them in patients of European extraction, five of them in the Darjiling Terai and one in Sylhet (*Journal of Tropical Medicine*, February 1899). There were several points in common in all these cases (1) they all occurred in low-lying malarious districts; (2) all had been exposed to malarial poisoning for several years; (3) the onset was sudden; (4) it did not occur during an attack of malarial fever, nor did it take the place of a paroxysm; (5) five of the cases occurred within a few miles of each other; in two cases patients had a second attack within the year; (6) the temperature was never very high, and in two cases never above normal; (7) there had been no extensive dosing with quinine, although all had taken quinine freely at times; (8) quinine seemed to increase the severity of the attacks. These cases differ considerably from Dr. Powell's, in the latter's cases there were rigors, high fever, sweating, &c.

As regards the use of **Quinine in Hæmoglobinuria**.—Bastianelli gives the following rules (quoted *apud Practitioner*, March 1899, p. 357):—(1) If parasites are in the blood quinine should always be given; (2) should hæmoglobinuria set in during a malarial attack and if on examination no parasites are found in the blood, quinine if it is being given should be stopped, and not given, because if previously it has been given the parasites are absent because the quinine has destroyed them, or if not given because the activity of the infection has ceased [though symptoms remain? W. J. B.]. In either case there is no longer any necessity for the drug. If uselessly given there is the risk of its causing hæmoglobinuria, which in its absence, might not have occurred. (3) If hæmoglobinuria comes on during a malarial attack and while quinine is being given should parasites persist in the blood the drug *must be persevered in* notwithstanding any risk there may be of the drug aggravating the symptom.

Malarial Kidney Disease.—The following sums up Thayer's views as to the occurrence of albuminuria and even acute nephritis in cases of malaria. Thayer gives the result of his well-known work on malarial fevers at the Johns Hopkins Hospital, Baltimore. During the past 8 years he has observed 758 cases of malarial fevers. In 46·4 per cent. albumen was present. Among 1,832 cases of malarial fevers there have been noted 26 cases of acute nephritis. He arrives at the following conclusions:—(1) albumen is of frequent occurrence in the malarial fevers of Baltimore (46·4 per cent.); (2) it is more frequent in æstivo-autumnal infections, 58 per cent. as opposed to 38 per cent. in intermittents; (3) acute nephritis is a not-unusual complication, 2 per cent. of cases, but 4·7 per cent. in æstivo-autumnal cases; (4) there is reason to believe that malarial infection, especially in tropical countries, may play an important part in the etiology of chronic renal disease. (*American Journal of Medical Science*, November 1898.)

[As said above this high percentage of albuminuria is entirely opposed to my personal experience of malarial fevers in India. I would not put the percentage of albuminuria seen in malarial fever cases in the autumn in ordinary Bengal and Behar districts at more than 3 or 4 per cent. Even in L. Roger's severe *kala-azar* cases he says, "the kidneys presented no pathological changes to the naked eye" and "no albumen" is frequently noted

in the clinical cases (Report, p. 108, &c.) Will any of our readers give their experience? W. J. B.]

Ergot in Chronic Malaria.—A. Jacobi has an article on the uses of ergot in chronic malarial cases (*Medical News*, October 22nd, 1898, quoted in *Medical Chronicle*, December 1898, p. 222). Jacobi prefers the solid alcoholic extract of the U. S. Pharmacopœia. Ergot acts upon unstriped muscular fibres. The capsule of the spleen consists of connective tissue, and unstriped muscle. The spleen net work contains much unstriped muscle fibers. Hence "no organ," says Jacobi, "is more amenable to the action of a muscle-contacting agent." We have in malaria two organs to consider, the blood and the spleen. The action of the ergot is to force the stagnating blood into the normal circulation with progressive elimination of the plasmodia. This action is due to the alkaloid cornutine.

Jacobi concludes (1) that when splenic enlargement is not old and firmly established the contracting effect is noticed; (2) attacks of fever will disappear before the diminution of the spleen is marked; (3) in some case quinine should be combined with the ergot; (4) by forcing large quantities of plasmodia-laden blood into the circulation, ergot is capable *at first* of bringing on attacks of fever. The theory appears to be that ergot forces the plasmodia out of the spleen into the general circulation, and in the blood the quinine can kill them.

W. J. BUCHANAN, B.A., M.B.

SPECIAL SENSES.

Artificial Eyeballs.—The ordinary shell-shaped prothesis or artificial eye, though suitable where an atrophied eye remains or where Mules' operation has been performed, does not answer its purpose well after enucleation. The inside of the shell affords a space in which tears and mucus accumulate, and the thin edges are apt to wound the conjunctival sac, causing scars and subsequently granulation tumours. Professor H. Snellen of Utrecht (*Ophthalmic Review*, Dec. 1898), has introduced an improved shape of artificial eye to do away with these disadvantages. He experimented by filling up the ordinary hollow artificial eyes with plaster of Paris and found the filled-in eyeshell was preferred by the patient despite its greater weight. He then had these filled-in shells copied and replaced by hollow glass globes, which were thus concave or convex at the back, according to the shape of the muscular stumps upon which they rested. Professor Snellen hopes that these new forms of protheses 'will help to enable us to retain the operation of simple enucleation, which, both for patient and surgeon, has certainly the great advantages of simplicity and convenience.'

Premature Delivery to Preserve Sight.—A. E. Adams reports two cases (*Annals of Ophthalmology*, Oct. 1898), in which premature labour was induced in consequence of rapid failure of vision due to albuminuric retinitis and hæmorrhages. The improvement of sight was considerable. An interesting point in one case was that the urine was free from albumen until after the onset of the neuritis. Dr. Adams urges that it is just as important to examine with the ophthalmoscope as it is to examine the urine in pregnancy, and that if neuro-retinitis and hæmorrhages with probable total loss of sight exist, premature delivery should be induced.

Keratitis and Conjunctivitis from Irritant Drugs.—Linde (*Deut. Med. Woch.*, No. 34, 1898, and *B. M. J. Epit.*, 4th March 1899), reports the case of a chemist's assistant who, while boiling cantharidis in alcohol, had his eyes blistered by the fumes. Phlyctenular keratitis followed in both eyes, and was cured in ten days under antiseptic treatment. In another case of psoriasis for which chrysarobin ointment was being used (1 in 4 in

vaseline) the patient apparently introduced some of it accidentally into his eyes, producing disintegration of the corneal epithelium with loss of sensation in the cornea. The patient was also suffering from nephritis. [The writer recently had a case in which pure chrysarobin accidentally introduced into the eye set up acute conjunctivitis. It was simply catarrhal in type through the pain, lachrymation and photophobia were severe. The cornea was unaffected. Recovery rapidly occurred under cocaine and zinc lotions].

F. P. MAYNARD, M.B., D.P.H.

PATHOLOGY AND BACTERIOLOGY.

La Propagation de la Peste.—Two long articles under this title appeared in the *Annales de l'Institut Pasteur* of October and November last by Dr. P. L. Simond, and Mr. E. H. Hankin, respectively, which are of great interest and importance. The former author, after first tracing the disease from Yunnan in 1893 to Hong-Kong in 1894, expresses the opinion that the disease spread from that port to Bombay. He then traces the course of the disease to other towns and lays stress on the fact that there is often a considerable interval between the first imported case in any place and the earliest indigenous ones. Passing on to the important question of the connection of rats with the spread of the disease, he states that, although it is doubtless carried to considerable distances by human beings, it appears to affect the rats before it attacks the indigenous inhabitants of such places in any numbers, while the spread from one part of a town to another or to neighbouring places always follows the migration of rats in the same direction and not the first flight of the people from the town, and instances Bombay as an example of this fact. Handling dead rats may cause infection, as in the case of a godown in Bombay, in which out of twenty coolies who were employed to remove dead rats ten got plague; while in the case of two at least out of four vessels leaving infected ports on which plague cases occurred dead rats had been previously found before the first case appeared. At the beginning of an outbreak of plague, many dead rats are always found, and in the later stages, when this is not the case, if these animals are caught in traps some of them will be found to be suffering from the disease while others are immune, having recovered from an attack. While at the time of a recrudescence of the disease, which he points out is generally about twelve months after the first outbreak whatever the season of this may have been, dead rats are once more found in considerable numbers, and he suggests that the interval between the different outbreaks in a town may depend on the time which must elapse before new broods of susceptible rats have been produced after the great death-rate among them in the first outbreak.

He then gives some experiments on the mode in which the infection among rats takes place, and shows that the feeding of these and other susceptible animals with the plague organisms, whether in the form of cultures, organs or glands from animals that have died of plague, or on the excrement of diseased rats or the sputum of pneumonic cases, does not produce the disease in mice, rats or monkeys or squirrels. Moreover the inhalation of powdered infected sputum of plague cases did not give the disease. The faeces and urine of rats that had died of plague when injected into mice did not cause plague, and he concludes that neither men nor rats are infected through the digestive canal or the lungs. He goes on to point out that visible wounds, through which the organisms could have entered the body, can rarely be found after the most careful search, and that the primary vesicles, which are doubtless the point of entrance of the bacilli are only present in about one case in twenty, and these are always mild at first, and hence the vesicles are a sign of local resistance of the tissues to a less virulent germ, and they are not met with when the

disease is very severe and the local resistance easily overcome. These vesicles are met with only on parts, where the skin is thin, and are not found in the septicemic and pneumonic forms, in which also he thinks the germ gain access to the body through the skin, but they are so virulent that they reach the blood or lungs without exciting inflammation in the glands through which they pass.

All these facts lead him to look for some parasite which could inoculate the bacillus into patients and so cause the disease, and his attention was directed to fleas and bugs. He found bacilli exactly like those of plague in the intestines of those fleas only which he had found on plague-stricken rats, and produced the disease in mice and rats by the injection of extract of such fleas. He found that a healthy rat quickly destroys these pests; but when ill of plague that they swarm on them. Further, the close contact in a jar of healthy rats with ones suffering from plague, who had been freed of all vermine never communicated the disease; while, on the other hand, by suspending a healthy rat in a jar with a plague rat full of fleas, but not in contact with him, the disease was conveyed. He points out that in all cases in which plague has been conveyed to men by handling rats, the animal had only been dead for a few hours, but after a longer time, when the fleas would have deserted the body, the rat is no longer infective. The incubative period in such cases, as well as in others in which the possibility of the germs having been present in clothes, etc., can be certainly excluded, is never longer than seventy-two hours. Prophylactic measures must be directed towards disinfecting clothes, etc., and destroying vermin with boiling water or burning sulphur and other disinfectants.

In the second paper referred to, Mr. Hankin first gives some interesting references to plague in England and in India during the last three centuries, and points out that the present epidemic in India has spread much more widely than previous ones, on account of the railway system. The infection may be carried by human beings, but is not ordinarily so, and in hospitals infection is rare. In Bombay the disease did not spread in an epidemic form when a large number of the inhabitants fled from the town, and in the first four months after its appearance in Bombay, only four other towns were infected. On the other hand, it was observed that the disease invaded different quarters of Bombay in an epidemic form gradually, beginning nine or ten weeks after its first appearance in Mandvie, and this gradual spread was preceded by migration of rats from the first infected parts to the surrounding districts, as is well shown in a diagram of the weeks which elapsed after the first appearance of plague in the city, and its outbreak in the different wards, which is given in this paper. The only marked exception to this statement is that of the ward of Lower Colaba, in which the disease appeared about six weeks after its breaking out in Mandvie, but there is a considerable direct water traffic between these two parts, and there are a large number of rat-infested cotton godowns in Colaba. The rats then are considered to play a more important part than human beings in the spread of the disease in neighbouring places, and through a large town; and the same events were observed in the case of Karachi. An instance, in which the inhabitants of a village imported a large number of cats in order to keep down the rats and so to avoid plague, and which remained almost completely free from the epidemic is recorded. The question of disinfectants is next considered, and it is pointed out that very little real good seems to have been effected in Bombay by the prodigal use of these materials, which may even help to spread the disease by causing the migration of rats from the cleansed quarter. Lime and other alkalies seem to be useless, while acids, especially if combined with perchloride of mercury, give the best results in destroying the plague bacillus, and permanganate and sulphuric acid combined (each in one per cent solutions) come next in efficiency. The question of the effect of free ventila-

tion and aëration in preventing plague is next considered at length, and diagrams and figures are given to show that the reported diminution of plague cases in the higher stories of houses is only in proportion to the number of rooms occupied in each floor, while the three wards of the town which had the fewest inhabitants per house were among those which suffer most severely from the disease, while one of the most densely crowded suffered very slightly. Again, there was no relationship between the ground area per inhabitant in different parts of the town and the severity of the disease, while the portions which contained most houses which were condemned as unfit for habitation were just those which suffered lightly from the pestilence. Classes of people who lived and slept constantly in the open-air were, it is true, nearly free from the disease, but they as well as those who lived in the best houses would be less likely to come into contact with dead rats, which were so often found in infected dwellings. Further, monkeys which lived entirely in the open air have been attacked by the disease. On the other hand, Mr. Hankin has found that if a series of rats are inoculated with plague one from the other, the disease loses its virulence and fails to be fatal to the third or fourth animal. While on the other hand, the bacillus appears to be intensified by passage through mice, which latter animals also die of plague although in less numbers than the larger rodents. Rats can be infected by the mouth with very virulent bacilli only. The explanation of these facts is doubtful, but the author suggests that possibly the germs of the disease may pass from the rat to some other medium, such as water or the soil or perhaps into the body of an insect, and then into another rat. The fact that the disease often continues in an epidemic form a long time after the complete disappearance of rats shows that some other agent is necessary to explain the persistence of the infection, and he quotes the case of Hardwar as a place in which the plague appeared in the absence of any dead rats; while in Kunkhal no epidemic followed the death of these animals for several months; but this may have been due to disinfection measures. Examples are then given of several weeks elapsing between the first imported case and the earliest indigenous ones, and some of infection by clothes. The difficulty in preventing the spread of the disease by rats is dwelt on, and the destruction of those houses in which these animals are able to establish themselves is said to be the best means of defence against plague.

These two papers are of great importance in establishing the very important part that is played by rodents in the spread of plague; while the difficulties in fully understanding exactly what rôle they play in its dissemination point to more researches on this question being urgently needed.

L. ROGERS, M.D., F.R.C.S.

Public Health.

Sawdust Urinals.—In a former issue we quoted an article advocating sawdust urinals. The *British Medical Journal* for November 19th comments on a letter in its columns from Lieutenant-Colonel Mayne, of the Indian Medical Service, as follows: "The opportunities afforded of testing an arrangement of this kind in an Indian military camp enable Colonel Mayne to speak with some authority. Excellent filters for the lines seem to have been made of half barrels. A paraffin tin was placed under each of these tubs, and the liquid which filtered through the sawdust in the barrel fell into the tin and was removed. It was odorless and inoffensive. The upper layer of sawdust is better removed from time to time. One great advantage of the sawdust conservancy system is the lessening of the fly nuisance. The working expense is also fortunately slight. In providing in this country for the large num-

ber of ladies brought together lately at a great musical festival lasting over several days, temporary conveniences were run up of an exceedingly simple character in an easily accessible, open, but walled-in portion of the premises. A few wooden partitions were curtained off. In each cabinet an ordinary seat, similar to those of pedestal closets, rested on brackets, and beneath was placed a small portable pail filled with sawdust. These pails were changed as soon as the audience had quitted the building. During the whole time, notwithstanding the close, muggy weather which prevailed, every cabinet is said to have been perfectly sweet." Such a method commends itself at once as a valuable addition to the sanitary measures needed in our camps, and we think that its adoption would be a wise move.

How to remain young.—Says the *Medical Age*:—"To drink of the waters of the fountain of youth is still, in the opinion of some, within range of possibility. A recent writer observes that man began in a gelatinous condition and ends in an osseous or bony one. He is soft in infancy; he is hard in old age. Ageing is a process of ossification. After middle life has passed a more marked development of the ossific character takes place. The arteries become thickened with calcareous matter, and there is interference with circulation, upon which nutrition depends. The whole change from youth to age is one of steady accumulation of calcareous deposits in the system. Entire blockage of the functions of the body is a mere matter of time, and the refuse matter deposited by the blood through the system stops the delicate machinery we call Life. The blood contains compounds of lime, magnesia, and iron. In the blood itself are these earthy salts. In early life they are thrown off; in age they are not. Almost every thing we eat contains these elements for destroying life. Earthy salts abound in the cereals, and bread itself, mistakenly called "the staff of life," is one of the most calcareous of edibles. Nitrogenous food also contains these elements, hence a diet made up of fruit is best for people advanced in years. The daily use of distilled water is, after middle life, one of the most important means of preventing secretions and derangements of health. Diluted phosphoric acid is one of the most powerful influences known to science for shielding the human system from the inconveniences of old age. Use it daily with distilled water, and so retard the approach of senility. To retain perpetual youth avoid all foods rich in the earth's salts, use much fruit, especially juicy, uncooked apples, and take daily two or three tumblerfuls of distilled water with about fifteen drops of diluted phosphoric acid in each glassful. Thus will our days be longer in the land.

The Mussack and Typhoid.—The question of the water-supply to troops in India always occupied a large space in the report of the Army Medical Department. A great deal is being done to lessen the mortality from enteric fever. Surgeon-Major Davies (late Assistant Professor of Hygiene at Netley) was directed to make sanitary and bacteriological examinations at Subathu and Dagshai. His reports, now printed, are said to be the first of this nature made on any military cantonment in India. Several schemes for improved water-supply are under consideration, and only await bacteriological reports to be proceeded with. With regard to the disposal of excreta the report says: "No system, however excellent in theory, will continue to be effective unless carried out under supervision by Europeans." The Government of India has adopted the principle of the elimination of the mussack, and is endeavouring to convey the water direct to the kitchens and lavatories by means of pipes, thus obviating the necessity of conveying water in leather mussacks by the native carriers. This is an important step in the right direction, for it will notably diminish the risks of contamination. In a statement to the House of Lords

concerning the British troops in South Africa, the Marquis of Lansdowne appears to have favoured an opinion, unfortunately deeply rooted in the popular mind that the spread of infection in the case of typhoid fever may be due to the presence in water of decomposing animal matter or of the carcasses of animals that have died from other kinds of disease. The Marquis of Lansdowne stated that "there had been a great deal of enteric fever, due, he believed, in a great measure to the pollution of the streams from the dead bodies of the numerous cattle that had perished from rinderpest of late." It cannot be too clearly recognised that typhoid or enteric fever is a specific infective fever, which is transmitted rarely directly but often indirectly from patient to patient; that it is not the result of the action of putrefying or diseased animal matter; that it does not arise *de novo*, but is always brought into a camp or barrack by a patient already suffering from the disease. The surest method of getting rid of enteric fever is to appreciate this fact. The addition organic impurities to water does not necessarily convert it into disease-producing water, although the presence of animal organic matter indicates the possibility of the access of infective matter. Water contaminated by sewage even may not be infective, although the presence of such sewage points to the liability of the water to become specifically infected should a case of enteric fever occur amongst the people from amongst whom the sewage material is taken. Until this fact is thoroughly appreciated and efforts are made to trace and get rid of the sources of specific infection much vain effort will be put forth to quell typhoid and cholera epidemics, and the real cause will be allowed to continue its operation undisturbed, and often even assisted.

TREATMENT OF PILES AND ALLIED AFFECTIONS, INCLUDING PRURITUS ANI.*

SOME diseases are important on account of their severity and of the danger to life which they occasion, others are important on account of their frequency and the amount of annoyance they cause to the patient. It is only in rare cases that piles cause any danger whatever to life, but they are so exceedingly common, so very annoying to the patient, so destructive of his comfort and occasionally of his temper, that they acquire an importance which justifies me, I think, in bringing the subject of their treatment before you to-night. I shall not attempt to deal with the surgical treatment of this disease, nor can I hope to give you anything very new or very striking in regard to the medical treatment. I rather hope to bring together some simple methods of treatment, preventive and curative, and by exciting discussion on the subject to elicit other methods, some of which may be known to one and some to another practitioner, but which, I think, are not all in common use together.

I need not enter minutely into the pathology of piles, which is fully treated in works on diseases of the rectum; I may merely remind you that they consist essentially of a dilated or varicose condition of the vessels, the arteries, capillaries, and especially the veins of the rectum, which are embedded in cellular tissue of a loose and yielding character, and are covered either by the mucous membrane of the rectum, by the skin outside the anus, or partly by the mucous membrane and partly by the skin, according as they are internal, external, or intermedial (or complicated, as they are termed by Mr. Allingham). The blood from these veins returns in a twofold way into the general circulation. Part of it flows through the anastomoses of the hæmorrhoidal with the systemic veins into the vena cava, while another

portion passes up through the intestinal and portal veins. The latter portion has therefore necessarily to pass through the liver before it can reach the general circulation, and this is a point of great practical importance, because the condition of the liver seriously affects the circulation in the rectum, and an impediment to the free flow of blood through the liver may tend very considerably to the distension of the hæmorrhoidal vessels and the production of piles.

Our ideas of the liver—derived as they generally are from seeing the organ in the dissecting-room or on the *post-mortem* table—are frequently quite erroneous, for we are apt to believe it to be a hard, solid, unyielding organ, whereas, on the contrary, a sponge would more nearly represent its behaviour. If we take the liver of an animal—such as a rabbit—which has just been killed, and pass a current of defibrinated blood through it by means of cannulae tied into the portal and hepatic veins, we find that the organ swells up enormously or becomes quite small in proportion to the pressure with which the blood is driven through it. The rapidity with which this distension and collapse occur is so great as to remind one, indeed, of the variations in the india-rubber ball of a spray producer. On looking at such an experiment, the first thing that strikes us is the question, if the liver contracts so readily under variations of blood pressure within it, why do we find the size of the liver so constant in man; why does it not expand and contract as we see it do in the laboratory? The answer to this is, I think, a very simple one. It is that the blood circulates in the portal vein under a very low pressure indeed, one which is not at all to be compared either with the pressure used in the experiment or with that which exists normally in the arterial system. But every now and again we do see the liver undergo changes in living men, quite as great though not so rapid as in the excised liver of the rabbit, of which we have just been speaking. Such changes are especially common in men who suffer from malarial fever, though we see them quite as markedly in the subjects of advanced mitral disease. Such distension of the liver indicates that the blood cannot flow away through the hepatic vein so quickly as it enters the portal vein, and this condition may either be brought about by too rapid a flow in the portal vein or obstruction to the circulation either in the liver itself or in the hepatic vein and general venous circulation into which it empties itself. It is quite possible that an augmented entrance of blood into the portal system may be one factor in producing congestion of the liver; but I think it is probable that portal congestion is generally due to obstruction in or beyond the liver. Nor do I think that obstruction to the flow of blood through the liver necessarily leads to enlargement of the liver, although it may do so. I believe—though it may be difficult to prove—that either the liver itself or the portal vein within it may present an obstacle to the passage of blood, and thus lead to portal congestion without the liver becoming any larger.

On looking at a section of the liver during fasting and digestion, one is struck by the great difference in the size of the cells in these two conditions, the cells being much larger after food. This difference must necessarily lead to a certain amount of compression both of the biliary and venous radicles, and thus hinder to a certain extent the passage of blood through the organ. The walls of the portal vein may also contract and present a certain hindrance. Whenever any portal obstruction occurs it will tend to increase the pressure in the hæmorrhoidal veins, and thus lead to their distension, notwithstanding the fact that the blood in them has another channel of exit. We can readily see that one cause of such an obstruction might be continuous enlargement of the hepatic cells from too abundant feeding, such as gave rise to congestion of the stomach in Alexis St. Martin, as observed by Dr. Beaumont through the fistula in his patient's stomach.

* Read before the Medical Society of London, March 7, 1892, by T. Lauder Brunton, M.D., D.Sc. Edin., LL.D. Hon. Aber., F.R.C.P., F.R.S.

Another cause of portal congestion is, I think, exposure to cold, although whether this acts through the cells of the liver or through its veins I am unable to say. We notice in the case of internal piles the sphincter ani may affect them either beneficially or injuriously, according to the circumstances under which the pile is to be found. So long as the pile remains inside, the sphincter ani tends to support and thus to ease it, and will, indeed, aid the circulation of the blood within it. But if the internal pile should become protruded and grasped by the sphincter ani, the contraction of the muscle will prevent the returning of the venous blood, will increase distension in the veins, and render the pile tense and painful. A somewhat similar action to that of the sphincter ani is said by Verneuil to be exerted by the muscular fibres of the rectum upon the superior hæmorrhoidal veins. These veins pass through little openings, which have been compared to buttonholes in the muscular wall of the rectum. There are two sets of the buttonholes at right angles to each other, the first set occurring in the circular and the second in the longitudinal fibres of the rectum. These buttonholes, like the sphincter ani in the case of the internal pile, probably have either a beneficial or an injurious action, according to circumstances, upon the hæmorrhoidal veins. It is highly probable, as Mr. Allingham has suggested, that they act as valves, tending to support the column of blood in the portal veins when there is congestion of the portal system, as, for example, in mitral disease; but it seems highly probable that they tend also, under other circumstances, to impede the return of blood from hæmorrhoidal veins by too greatly constricting them, just as the sphincter ani does with a protruding pile. Too great a constriction of these fibres would explain the occasional very rapid occurrence of piles, such as we sometimes find after a violent motion of the bowels, especially when this has been brought on by some intestinal irritant, particularly by such as seem to have a selective action on the lower bowel, like aloes. A similar excessive contraction, due to temperature, may also be the explanation of the well-known frequent occurrence of piles after sitting on a cold stone or on damp grass. It is clear that however strongly the muscular fibres of the rectum contract, they will not cause great obstruction to the return of venous blood through those buttonholes if the longitudinal and circular fibres contract with an alternate rhythm, as they ought to do, because the contraction of the one set of fibres will be accompanied by relaxation of the others, and the flow of blood through those buttonholes will be accelerated rather than hindered by the rhythmical contraction and relaxation exerting a kind of pumping action. But it is quite different if either the one or the other set of fibres should contract continuously, and such continuous contraction probably affects the circular fibres during prolonged straining at stool, when the bowel tends to be everted. Accumulation of fecal matters in the intestine may interfere with the venous return or may act as a reflex irritant.

We may classify the causes of venous obstruction leading to piles as due (a) to portal congestion, and (b) to local irritation and contraction of muscular fibres in the rectum itself. But we have hitherto left out of account two other important factors—namely, dilatation of the hæmorrhoidal arteries and local irritation of the veins themselves; both of these probably play an important part in the causation of piles. The part taken by the arteries frequently becomes evident to the sufferer himself from the throbbing pain felt in the bowels and coincident with the arterial pulses. Local irritation of veins has frequently the effect of causing them to dilate. When working in Ludwig's laboratory in 1869, I made a number of observations upon the effect of local irritation of arteries and veins.* In some of the experiments I made under

Ludwig's direction, the nerves of a part were all cut through, and in the arteries whose nervous supply had thus been destroyed I noticed that the arterial walls, instead of contracting as they usually do upon irritation, became dilated, and the dilatation assumed a somewhat saclike character, which lasted for a long time after the irritation had been discontinued. I observed a similar occurrence in the veins; but, if I remember aright, the veins tended frequently to become dilated on local irritation, even where the nervous supply had not been destroyed, although it is quite possible that the conditions under which the veins were observed may have partially disturbed their innervation. We cannot, therefore, throw on one side the nervous supply of the hæmorrhoidal veins as of no account in the production of hæmorrhage; on the contrary, it may have a very important action indeed, although we may not be at present able to explain it or to define its limits.

Let us turn now to the conditions which tend to bring on piles. First of all, then, we have too free living with insufficient exercise, so that the liver, which may be compared to the coal-bunker of the body, has its cells too constantly filled with reserved nutriment, and this tends to present a hinderance to the passage of portal blood. Next comes what is usually known as a chill in the liver. What the exact pathology of this is, I cannot positively say, but it is a condition which comes on with very great readiness in people who have suffered much from malaria, and in them we find that the liver tends to become larger than usual—sometimes only a little, sometimes very much larger—and at the same time becomes tender to touch. This condition is frequently associated with loss of appetite, and sometimes with intestinal pains, and a frequent concomitant of it is piles. This condition is brought on in persons subject to malaria with very great ease indeed, and the observations made upon them are most instructive, as showing us how to treat not only such patients, but also others who may suffer from the same causes in a less degree. There are four places in such persons which are apt to be affected by a chill. First, the back of the neck; secondly, the abdomen; thirdly, the shins; and fourthly, the feet. The danger of wet feet is universally recognised, and no one wonders when a person gets gastric or intestinal catarrh, or both together, after sitting in wet boots. The danger of cold to the abdomen is almost universally recognised in tropical countries, and in India people will wear many turns of cloth round their middle who have little covering to the rest of their bodies.

(To be continued.)

Correspondence.

ANTITOXIC USE OF BILE IN HINDU MEDICINE.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—It may interest you, Prof. Fraser of Edinburgh and those of your readers who have watched with attention the recent researches of Prof. Fraser regarding the antivenomous properties of bile, to know that *Charak*, the earliest record of Hindu medicine, contains instructions about the use of bile internally in cases of poisoning.

Prof. Fraser's researches regarding the use of bile in combating the effects of disease toxins in animals, and his prediction about the therapeutic and physiological value of bile, have also a counterpart in the sanction which the Hindu system of medicine gives to the use of certain of its preparations, in which animal bile and snake-poison form special ingredients, in certain desperate cases of fever. Styled *Sanvi patu* and popularly known as *Bikara*, characterised by symptoms denoting profound implication of the cerebro-spinal nervous system and extreme prostration of the circulating system.

Incidentally it is asked here, are not these the principal pathological conditions in cases of poisoning by snake-venom, as well as by disease toxins, such as Plague Typhus, &c., and cannot the constitutions of these preparations and the recorded symptoms

* Ludwig's *Arbeiten*, Vierter Jahrgang, p. 107, and *Ber. d. K. K. Gesellsch. d. Wiss.*, Bd. xxi, p. 291.

described in Sanskrit books indicating their use, suggest some remedy for Plague? They may, on theoretic grounds, also, claim as much attention from the students of scientific therapeutics as any of the curative serums, at least, so long as the hitherto adopted several lines of treatment of Plague continue to be unsatisfactory and the field of specifics remain open.

It is supposed here that bile in these preparations, besides exercising anti-toxic properties, may also so attenuate the snake-poison with which it is combined and to which it is an antidote, that the snake-poison may lose its lethal action, but at the same time, may exercise a curative value, by antagonising the action of disease-toxins in the system. This is only a supposition requiring corroboration from clinical experience.

I give below the names of some of them. Every *kabiraj* knows them at least by name. Their clinical experience, regarding the use of those remedies, may now be very limited, as they seldom get an opportunity of treating cases of fever with urgent symptoms. They are—

1. *Suchikavaram Rasa.*
2. *Aghore Nrnangha Rasa.*
3. *Trailockya Chintamani.*

N.B.—In the preparation of the third, serpent's bile is also used. But this serpent is popularly known to be non-venomous.

The following are the *Shlokas* from *Charaka* mentioning the use of animal bile in cases of poisoning. The last stanza is from *Susruta*, a work equally authoritative. I have tried to make the translation literal, supplying such explanatory words and phrases within brackets as are calculated to make the quotation intelligible:—

CHARAKA.—Part—Treatment, CHAP. XXV, Edition Bangabasi.

(1) *Gopitayutā rajanī manjishthā maricha pippalipānam.*

Verse 38.

Ox-gall rubbed with Turmeric, Madar* Black pepper, Long pepper to be taken internally (in cases of poisoning).

(2) *Slkhpittārdhayutam Syāt palāsa bijamagad mritshu matah.*

Verse 40.

Peacock's bile with double its quantity of the seeds of *Buten fradosa* is a remedy in moribund cases of poisoning.

(3) *Bārtākūphānītāgārdhuma gopitā nimbambā.*

Verse 40.

Ox-gall with Brinjal lampblack, Nim and fermented molasses is another (remedy).

(4) *Gopitayutairgulikāh Surashāgranthi dvirajanī madhuka-kushthai sasta.*

Verse 41.

Pills prepared with ox-gall and acorns, turmeric, Berberis, liquorice and Ocimum sanct. are capital remedies (in cases of poisoning).

(5) *Pishtvahi ajasya mutrena goscapittena Dashlabi-shapitabishaghlāti.*

Verse 55.

Ox-gall and horse's bile mixed with goat's urine (and rubbed with certain other ingredients) forms an antidote to poisoning either ingested or introduced into the system through bite.

(6) *Tittena gādām poshyā gūlilān Mushilātātānām Sarbe, shām pannagānāmcha āśū bisham nāsayati.*

Verse 56.

Pills prepared with ox-gall (and other ingredients amongst which *garochona*, an inspissated form of bile also occurs) rapidly antagonises the poison of rats, spiders and all kinds of snakes.

(7) *Pippalī marichakshārabuchā Saindhabasigrakāh.*

Pishtvā rohitāpittena ghnantyakshigatamaujanāt.

Verse 140.

Collyrium prepared with the bile of Rohu fish rubbed with black pepper, acorns, rock salt, long pepper, antagonises the poison when it affects the eyes.

(8) *Bishe pakvāsāyagatē pippalī rajantāwayam.*

Marjishthā cha samam pisthā gopittena narah pibet.

Verse 143.

When the poison affects the intestines, ox-gall being rubbed up with equal parts of long pepper, turmeric, Berberis, and Madar, should be taken internally.

(9) *Rohitakasya pittena pistvā tuparamogadah.*

Verse 170.

(Certain ingredients) rubbed with bile of Rohu fish is an excellent antidote in cases of poisoning. (This probably forms the bite of insects).

(10) *Chāruaim Sāsindhabānantagopitā madhusamjulam.*

Sārbakārmikah. Verse 181.
-salt, Homodesmis, honey
(sandal-wood, turmeric, Pinus aodara, O. sanctum, Cucumin

Bals. Mukul) and others, is a remedy in cases of poisoning by the bite of quadrupeds.

(11) *Karanjabijam tagaram Sirishapushparicha gopitayutam nihanti. Bishānī lātondāru pannagānām.* Verse 27.

SUSRUTAH.

Kapasthan, 5th Chap.

Ox-gall rubbed with seeds of Gall. Indica Tubernæ Coronaria and flowers of Sirisha is an antidote in cases of poisoning by rats, spiders and snakes.

CALCUTTA,
The 15th April 1899. }

Yours, &c.,
D. G.

MEDICAL ETHICS.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—May I be permitted to record my appreciation of the admirable address by Dr. P. S. Chandra Sekar, M.B., to newly qualified medical men which appeared in your issue for March 1899. As one of nearly forty years' experience of the medical profession, civil and military, not only throughout the greater part of India, but many other parts of the world besides, I can say that I have never read an address more useful and more thoroughly to the purpose. Dr. Sekar has, as far as I can see, left no point untouched, and I congratulate him on an address which I think is worthy of being inscribed in letters of gold for the benefit, not only of the Native Indian profession for which I assume it is specially intended, but for the medical profession of the world.

Yours faithfully,

J. ALEX. SCOTT, M.R.C.S., M.R.C.P.I.,

NAHAN, } LIEUT.-COL., A.M.S., Retired,
SIRMOUR STATE, PANJAB, } Chief Medical Officer, Sirmour State.
April 1899.

Service Notes.

THE KING AND THE AIGUILLETTE.

It will be remembered, writes the *British Medical Journal*, that some time ago there was a great commotion about an order issued in India, forbidding the Viceroy's Surgeons to wear the aiguillette, which all the other officers of the Governor-General's staff wear. Had the following anecdote, dating back to the time of George IV, anything to do with it? The anecdote is to be found in a most interesting work, *Collections and Recollections*, by One Who Has Kept a Diary. "The late Lord Charles Russell (1807—1894) when a youth of 18, had just received a commission in the Blues, and was commanded with the rest of his regiment to a full-dress ball at Carlton House, where the King (George IV) then held his court. Unluckily for his peace of mind, the young subaltern dressed at his father's house, and not being used to the splendid paraphernalia of the Blues' uniform, he omitted to put on his aiguillette. Arrived at Carlton House, the company, before they could enter the ball-room, had to advance in single file along a corridor in which the old King, bewigged and bestarred, was seated on a sofa. When the hapless youth, who lacked the aiguillette, approached the presence, he heard a very high voice exclaim—"Who is this d-d fellow?" Retreat was impossible, and there was nothing for it but to shuffle on and try to pass the King without further rebuke. Not a bit of it. As he neared the sofa, the King exclaimed, "Good evening, Sir; I suppose you are the regimental doctor?" And the imperfectly-accounted youth, covered with confusion as with a cloak, fled blushing into the ball-room and hid himself from further observation." The writer of the book alluded to, appropriately adds: "And yet the narrator of this painful story always declared that George IV could be very gracious when the fancy took him; that he was uniformly kind to children; and that on public occasions his manner was the perfection of kingly courtesy."

SIR JOSEPH FAYRER.

JANUS for January and February publishes a very interesting account, accompanied by an admirable portrait, of Sir Joseph Fayrer, veteran Surgeon-General of the British Army. Sir Joseph was the son of Commander Fayrer of the Royal Navy and first entered the navy as an assistant surgeon, but subsequently resigned his commission in the service and entered the army. Sir Joseph Fayrer, as is well-known, served in Lucknow, through the siege, during the Indian Mutiny. His contributions to medical literature have been as varied as they are valuable.

MINT APPOINTMENTS.

THE small Assay Department of the Mint, which is open to officers of the Indian Medical Service, offers excellent attractions in the matter of pay, being an appanage of the Financial Department of the Government of India:—

The monthly pay of a Deputy Assay Master is as follows:—

Standing on First Appointment.	Min. pay.	Yearly Increment.	Max. Pay.
	Rs.	Rs.	Rs.
Under six years ...	600	100	1,200
Six years ...	650		
Seven years ...	750		
and so on, Rs. 100 being added for each additional year's standing on first appointment.			

The pay of an Assay Master (irrespective of his standing in the service) is Rs. 1,750, rising by five equal yearly increments of Rs. 100 to Rs. 2,250. There is no allowance for house rent.

ARMY NURSING SISTERS.

NURSING SISTERS are required—the Under-Secretary for War told the House on Monday—to have three years' training in a civil hospital, and six months' probation in the Army Nursing Service, before final appointment. A private of the Royal Army Medical Corps receives instruction at Aldershot for five months; after that he is attached as a supernumerary to a large military hospital to learn nursing and ward work, and he remains there till efficient. The education is, moreover, systematically continued as long as he is with the colours. The Royal Army Medical Corps is responsible for all hospital duties, but all the men are available for nursing duties, and perform them in turn.

SCHOOL NOMINATIONS FOR THE ARMY MEDICAL SERVICE.

THE Director-General has recently reissued his invitation to certain colleges, universities, and medical schools to nominate, each, a diplomate for a Commission in the Army Medical Corps, subject to the approval of the War Secretary. The *Medical Press* makes the following comments on this subject. The Irish College of Surgeons agreed last week to recommend Mr. Davies, one of its Licentiates, who had served some time as a civil practitioner in charge of troops at the Curragh Camp. There were, we understand, ten competitors. A nomination has also been offered to the medical school of the Catholic University. We have long since pointed out that there are grave objections to this nomination system from the collegiate point of view. In the first place, the Army Medical Officers may very naturally take umbrage at the admission, by a side entrance, to the pale into which they have been obliged to win their way by a stiff competitive examination, and they regard the nomination system as an official expedient to fill up the hiatus in the ranks of the corps which has arisen from the refusal of the authorities to do justice to the medical staff. The Licentiates and Fellows of the colleges, who have been agitating for that justice, will not thank the colleges for having come to the rescue of the authorities just when the victory of the profession is nearly won. Then, again, we cannot regard it as a kindness towards any young man to assist him in entering the Service by the back door. He is, no doubt, grateful at the moment, because he is saved all the delay, expense, and risk of a competitive examination, but we apprehend that he will not appreciate the boon when he finds his method of entry thrown in his teeth by brother officers who dislike or are jealous of him. Say what he may, he cannot get over the fact, and, in our opinion, the temporary advantage is dearly bought. Lastly, in the interest of the Colleges themselves, we submit that the petty patronage of one or two student nominations for one or two years is not sufficient compensation for involving themselves in personal controversies. It is notorious that these nominations are the subject of contests between rival schools and hospitals, and of importunate canvassing by the personal friends of the competitors, and we feel that no matter how excellent the selection of a nominee may be, the College cannot escape the sneers and abuse of all those who are unsuccessful. We urge that it is altogether beneath the dignity of public institutions of high standing to associate themselves, in any way, with such proceedings, especially as in so doing, they must accept the responsibility of acting as sponsors for their nominee, and for his professional competency, industry, and personal conduct ever afterwards. We are clearly of opinion that, all things considered, the game is not worth the candle.

THE PARKES MEMORIAL PRIZE.

THE subject for the next Parkes Memorial Prize, which is open to Medical Officers of the Royal Navy, Army, and Indian Medical Services of executive rank on full pay (with the exception of the Assistant Professors of the Army Medical School during their

term of office), is "Venereal Diseases in the British and Indian Armies: their Prevalence and Prevention." Essays, which must be illustrated as far as practicable from the personal experience of the writer, must be sent to the Secretary of the Parkes Memorial Fund, Royal Victoria Hospital, Netley, on or before December 31st, 1900. Each essay to have a motto and to be accompanied by a sealed envelope bearing the same motto, and containing the name of the competitor.

THE New Cantonment Rules in India already appear to be beneficial. In reply to a question by Major Rasch in the House of Commons lately, Lord George Hamilton stated that the admission rate for venereal disease in the Indian Army was 485 per 1,000 in 1897, against 511 in 1896, a reduction of 26 per 1,000. The new rules were not brought into force until the end of 1897, which would explain the comparatively small reduction so far effected. Pending the reception of more circumstantial reports, he did not propose to take any further action, adding that the returns for 1898, as far as they were at present known, were very encouraging.

THE Sisters engaged by the Secretary of State, for plague work in this country, are fast returning home as their term of agreement with the Government ends. Rs. 175 per month is the pay (less income-tax) of these hard-working women who daily risk their lives for a pittance which barely covers their expenses. A few are paid Rs. 250 and Rs. 300 per month.

SURGEON-GENERAL SIR CHARLES A. GORDON, K.C.B., the author of *Recollections of Thirty-Nine Years in the Army*, has (says *Literature*) been occupied for some months past in collecting a series of notes on early sanitation in India, from the arrival of the Portuguese in 1498 down to the formation of the Royal Commission in 1859. Sir Charles Gordon has now a tolerably complete series of notes on the use of animal matters and their derivatives as therapeutic agents in England during the seventeenth century, and in China at the present time.

THE system under which it is sought to send out convalescent soldiers into small camps, or move them for change of air from one station to another is being gradually introduced in India in the Bengal Command. It promises to be very successful, and extra grants for money will probably be made to extend it.

SIR GEORGE ROBERTSON, I.M.S., who has been granted six months' special leave, will, it is said, retire from India at the end of that period. Messrs. Methuen will shortly publish a new and cheaper edition of his fascinating *Siege of Chitral*.

A HIGH compliment is paid to Lieut.-Colonel W. J. Fawcett, R.A.M.C., in a recent Government review of the plague operations in Poona and Kirkee. The report, we are told is "the record of work carefully and patiently done, in which the supervision of every detail was methodically provided for," and, what is still more creditable, "to a great extent the co-operation of the bulk of the population was secured."

THERE has been recently a heavy drain on the strength of the Indian Medical Department, and the establishment just now is much under strength; 28 officers have been lent for special military duty, and 32 are on special plague work, while over 100 have taken advantage of the leave which was only re-opened a few months ago.

COLONEL T. H. HENDLEY, C.I.E., is appointed a Trustee of the Indian Museum, Calcutta.

THE Royal Red Cross is conferred upon Nurses Wilshaw and Harper for services in Egypt.

COLONEL A. L. BROWNE, R.A.M.C., officiating Principal Medical Officer, Belgaum, has applied to retire.

QUESTIONS AT THE LAST SERVICE EXAMINATION IN LONDON.

CHEMISTRY AND MATERIA MEDICA.

1. WHAT is an alkaloid? What are the tests for (a) morphine hydrochloridum, (b) strychnina, (c) atropina? What official preparations contain strychnina, and what are their respective strengths. 2. How do you prepare oxygen? How would you

administer it to a patient? 3. Give the official doses (for an adult) of liquor thyroidei, pepsinum, liquor trinitrini, tinctura camphorae composita, pulvis kino compositus, scammoniae resina, injection apomorphinae hypodermica. How is liquor thyroidei prepared? What are the constituents of mistura ferri composita? 4. Describe the preparation of infusum cinchonae acidum, infusum digitalis, infusum gentianae compositum, infusum scoparii, infusum senegae, glycerium. 5. Give the formulae for acidum sulphuricum, acidum sulphurosum, acidum nitricum. Explain how each may be made, and give the tests for each.

MEDICINE AND PATHOLOGY.

1. (a) What points in the history (e.g., cough, fever, etc.)—would enable you to diagnose the pneumonia—apart from physical signs (e.g., crackles, dullness, etc.)? (b) Describe the tabular form, the differences in the physical signs in pneumonia in the stage of consolidation, and in fluid effusion into the left pleura.

2. A labourer, *at*, 45, was admitted into hospital on September 4th, 1898. Four years previous to this he injured his right elbow joint, which led to bone disease with protracted suppuration. On admission it was found that several of the internal organs were affected. What was the probable nature of this disease? Enumerate the symptoms pertaining to each of these organs, and, in the event of a fatal issue, state in detail what you would find *post-mortem*.

3. Under what circumstances is cerebral disease likely to be followed by descending sclerosis? Indicate the path which the sclerosis follows, and give a sketch of the superadded symptoms indicative of that complication.

4. How would you treat typical cases of—(a) Diabetes mellitus? (b) The night sweats of phthisis? (c) An obstinate specific ulceration of the tongue of old standing?

NATURAL SCIENCES.

Geology and Physical Geography.

1. What is meteoric iron? In what situations does it occur, and how is its presence explained?

2. What are the chief strata in which fossil remains of (a) mammals, (b) reptiles, (c) cephalopods, occur? Mention examples.

3. What is meant by denudation? How would you recognise its effects on a tract of country? Mention localities where its effects may be seen in the British Islands.

Physics.

1. Describe the structure and uses of (a) the barometer, (b) the hygrometer. What are the peculiarities of an aneroid barometer?

2. What is meant by the magnetism of the earth? Describe the structure and explain the action of the Mariner's compass.

3. State Newton's laws of motion. Illustrate each by an example. Explain the following terms:—(a) gravitation, (b) tide, (c) temperature.

Botany.

1. Give the characters of the following natural orders: Labiales, Gentianaceae, Scrophulariaceae, Solanaceae, Labiales, Orchidaceae. Compare the structure of the flower of a rose with that of the flower of an anemone.

2. Describe the chief forms of inflorescence, of placentation, of vernation, of aestivation, and of roots, giving an example of each.

3. Write a short account of the general structure of any flowering plant with which you are familiar.

Zoology.

1. What are the chief peculiarities of the fauna of (a) New Zealand, (b) Australia, (c) South America, (d) Madagascar, (e) Great Britain, (f) Ireland?

2. Write a short account of the development of the frog from the spawn to the adult condition.

3. What are the chief peculiarities in the anatomy of (a) Camel, (b) Elephant, (c) Crocodile, (d) Rattlesnake, (e) Gymnotus.

SURGERY.

1. Give the pathology, symptoms, and treatment of rickets. What changes, immediate and remote, does it produce in a long bone, the femur for instance?

2. Describe a case of acute traumatic tetanus. Give the symptoms, pathology, treatment, and prognosis of the disease.

3. Give the causes, complications, and treatment of entropion.

4. What abnormal conditions may be associated with an imperfect descent of the testis? Give their differential diagnosis, and briefly indicate the treatment of each.

ANATOMY AND PHYSIOLOGY.

1. Describe the manner in which the flexor tendons of the fingers and thumb are arranged in front of the wrist, in the palm, and in front of the digits. This description must include an account of the anterior annular ligament, of the flexor digital sheaths, and also of the synovial sheaths in relation to the tendons. Special value will be given to the practical points brought out in the description.

2. Trace the vagus nerve through the neck and thorax to its termination in the abdomen. Enumerate its branches and state the points in which the left nerve differs from the right. Have these differences in the relations presented by the two nerves any practical bearing in connection with aneurisms occurring within the thorax?

3. Within what area of the cerebral cortex do the nerve fibres, which form the pyramidal tract arise? Trace this tract in its downward path through the brain and spinal cord, and state how its component fibres end.

4. Give the minute structure of a hepatic lobule, and state very shortly what you know of the "glycogenic function" of the liver.

Obituary.

SURGEON-GENERAL W. M. WEBB.

SURGEON-GENERAL WILLIAM MARSHALL WEBB, late of the Army Medical Staff, died on Saturday at the Ghezireh Palace Hotel, Cairo, at the age of sixty-five. The third son of the late Captain J. W. Webb, of the 79th (Cameron) Highlanders, he was born in 1833, admitted a Licentiate of the Royal College of Surgeons in Ireland in 1853, and the following March was appointed an Assistant-Surgeon in the Army. He was almost immediately employed on active service in the field, being engaged with the 19th Regiment throughout the Crimean Campaign of 1854-5. For his services he received the medal with three clasps and the Turkish medal. He became a Surgeon in 1864, Surgeon-Major in 1873, Brigade-Surgeon in 1879, Deputy Surgeon-General in 1881, and Surgeon-Major-General in 1887, being placed on retired pay in July, 1893.

He was well known as a sympathetic and popular officer in India, where he spent a large part of his service as Secretary to the Principal Medical Officer, H. M.'s Forces, and afterwards as Deputy Surgeon-General of Meerut Division, and Principal Medical Officer, Bombay.

Gazette Notifications.

GOVT. OF INDIA

MILITARY

Surgeon General PRICE is appointed Principal Medical Officer Egypt. Surgeon General MUNN, who has been appointed Deputy Director General of the Army Medical Service in the War Office.

Major R. J. WINDLE, M.B., R.A.M.C., is placed temporarily at the disposal of the Government of Bombay.

Captain A. T. THURRIE, R.A.M.C., is appointed to the Principal Medical Officer, Punjab, from the 20th March 1899, vice Captain G. B. STANISBETH, R.A.M.C., who has been granted seven months' leave on private affairs.

The following officers R.A.M.C., are posted as follows:—Major Harwood to the Punjab, Major Adamson and Lt. Munro to Bengal, Lt. Cowan to Madras.

Major DUNDIE proceeds to Malta, exchanging with Major DONALDSON. Major F. J. DOYLE, I.M.S., 1st Infantry, Hyderabad Contingent, to the officiating medical charge of the 3rd Lancers, Hyderabad Contingent, vice Major R. JAMES I.M.S., granted leave.

Lieutenant A. N. FLEMING, I.M.S., to the officiating medical charge of the 1st Infantry, Hyderabad Contingent, vice Major F. J. DOYLE, I.M.S.

Captain J. FISHER, D.S.O., I.M.S., to the officiating medical charge of the 2nd Central India Horse, vice Captain C. M. MOORE, I.M.S., transferred to temporary civil employment.

The undermentioned probationers for the Indian Medical Service, having completed a course of instruction at the Army Medical School and being reported qualified, have been appointed Lieutenants, their commissions being dated the 28th January 1899, the day on which they passed out of the Army Medical School:—

JOHN CURRIE	IC	WALTER
WILLIAM SOUTH	IC	HUTCHINSON
(Punjab), CORRIE	IC	MAURICE
(Bombay) CHAFFIN	IC	ELIACOTT
CRUDDAS (Punjab)	IC	VIVIAN
LEMON WARD	IC	(Bombay)
HARRIS (Punjab)	IC	(Madras)
CHARLES HENLEY	IC	
THOMAS SPINKS ROSS	(Madras)	GEORGE PATRICK THOMSON GROUB
(Madras), PANDIT PARASURATI ATULI	(Madras), WILLIAM MACMILLAN	
PEARSON (Madras), DAVID CLAUDE KEMP	(Madras)	

PROMOTIONS INDIAN MEDICAL SERVICE.

BENGAL ESTABLISHMENT.

Lieutenant-Colonel to be Brigade-Surgeon-Lieutenant-Colonel.
 MATHEW DENIS MORIARTY, M.D., F.R.C.S.I., *vice* F. A. SMYTH, *retired*.

Majors to be Lieutenant-Colonels.

FRANCIS FREDERIC PERRY, F.R.C.S., STEPHEN LITTLE, M.D., GEORGE HART DISMOND GIMLETTE, M.D., CHRISTIAN BERNARD HUNTER, JULIAN CARTER CARINGTON SMITH, M.B.

MADRAS MEDICAL ESTABLISHMENT.

WILLIAM FREDERICK THOMAS, M.D., HENRY GEORGE LUTHER WORTABET, M.D., EDULJI PALANJI FRENCHMAN, RICHARD JAMES, M.B., SARKIES CARRAPIET SARKIES, DAVID STUART ERSKINE BAIN.

BENGAL MEDICAL ESTABLISHMENT.

Captains to be Majors.

WILLIAM HENRY WILSON ELLIOT, M.B., WILLIAM RONALDSON CLARK, GEORGE FREDERICK WILLIAM BRAIDE, ROBERT JOHN MARKS, CHARLES EDWARD SUNDER, M.B., B.S., MALCOLM ALBERT KER, ANDREW BUCHANAN, LEWIS GORDON FISCHER, WILLIAM VOST, M.B., C.M., JOHN GERVIE, CLARENCE EDWIN LLOYD GILBERT, COURTENAY CLARKE MANIFOLD, GERARD BEATTY IRVINE.

MADRAS MEDICAL ESTABLISHMENT.

FREDERICK JAMES CRAWFORD, M.D., DAVID SIMPSON, M.B., C.M., ROBERT ROBERTSON, M.B., C.M., THOMAS CHARLES MOORE.

BOMBAY MEDICAL ESTABLISHMENT.

CHARLES HARDWICK LOUW MEYER, M.D., B.S., LETTERSTEDT FREDERICK CHILDE, M.B., HERBERT HERBERT, F.R.C.S., THOMAS DAVID COLLIS BARRY.

INDIAN SUBORDINATE MEDICAL DEPARTMENT.

Bengal Establishment.

Senior Assistant Surgeon and Honorary Lieutenant GEORGE FRANCIS FOX to be Senior Assistant Surgeon, with the honorary rank of Captain, subject to Her Majesty's approval.

First class Assistant Surgeon WILLIAM ARCHIBALD WESTON, to be Senior Assistant Surgeon, with the honorary rank of Lieutenant.

CIVIL.

Lieutenant-Colonel J. ANDERSON, M.B., I.M.S., (Bengal) Civil Surgeon, Simla, is replaced at the disposal of the Government of the North-Western Provinces and Oudh, with effect from the date on which he is relieved of his duties.

Major H. C. BANERJI, I.M.S., Civil Surgeon, Sylhet, is placed at the disposal of the Government of India, Home Department, with effect from the date on which he is relieved of his duties as Civil Surgeon of Sylhet.

Lieutenant W. J. NIBLOCK, M.B., B.C.H., I.M.S. (Madras), is placed temporarily at the disposal of the Government of Madras, on the 11th February, 1899.

Captain C. G. SPENCER, M.B., F.R.C.S., R.A.M.C., is replaced at the disposal of the Military Department, with effect from the 26th March 1899.

Captain R. C. MACWATT, M.B., I.M.S., 7th Bengal Cavalry, is placed temporarily at the disposal of the Government of the North-Western Provinces and Oudh, for employment on plague duty.

Captain T. H. SYMONS, I.M.S., assumed charge of the Civil Medical duties of Wana, Southern Waziristan, on the afternoon of the 16th of March 1899, relieving Captain R. G. TURNER, I.M.S.

FURLOUGH.

Colonel BURNETT, R.A.M.C., Principal Medical Officer at Mandalay, proceeds on eight months' leave home.

Captain H. E. DRAKE-BROCKMAN, I. M. S. (Bengal), on special duty in the Bhartpur State, is granted furlough on medical certificate for nine months.

RETIREMENT.

Captain MURISON, R.A.M.C., retires from the service by resignation of his commission, with effect from the 31st March.

N.-W. PROVINCES

Maj. r J. M. CADELL, I.M.S., Deputy Sanitary Commissioner, on return from leave, to be a Civil Surgeon of the Second Class and posted to the Mainpuri district.

Captain R. J. MARKS, I.M.S., Supernumerary Civil Surgeon from Plague Platform Inspection duty, Saharanpur, to the Etawah district, as Officiating Civil Surgeon.

Civil Assistant Surgeon LALIT MOHAN SEN, attached to Sadar Dispensary, Muttra, privilege leave for three months, with effect from the 20th March 1899, or subsequent date.

Civil Assistant Surgeon CHAMAN SINGH, on Plague duty at Allahabad, in connection with Magh Meia, to Reserve duty at that station from the 1st March 1899.

Civil Assistant Surgeon BAIJ NATH VIAS, on Reserve duty at Agra, to the charge of Sadar Dispensary, Muttra, during the absence of Assistant Surgeon LALIT MOHAN SEN.

Military Assistant Surgeon E. P. CLEMENTS of Bara Banki, seven months on medical certificate under rule 1 of the Furlough Rules of 1875.

Civil Assistant Surgeon MAHENDRA NATH OHDEBAR, Rai Bahadur, attached to the Colvin Dispy, Allahabad, to the civil medical charge of the Bara Banki district, *vice* Mily. Asst. Surgn. E. P. CLEMENTS, granted furlough.

Doctor E. J. SIMPSON, Civil Surgeon, Rai Bareilly, to officiate as a temporary measure as Superintendent, Central Prison, Lucknow, *vice* Lieutenant-Colonel R. A. K. HOLMES, I.M.S., *retired*.

Captain R. C. MACWORTH, I.M.S., whose services have been temporarily placed at the disposal of this Government, to Plague Platform Inspection duty, Saharanpur.

Major C. C. VAID, I.M.S., Civil Surgeon, Mirzapur, on being relieved, furlough out of India for one year.

Lieutenant-Colonel B. O'BRIEN, I.M.S., Civil Surgeon, Allahabad, on being relieved, furlough out of India on private affairs for six months under Rule IX of the Furlough Rules of 1865.

Major W. G. F. ALPIN, I.M.S., Civil Surgeon, Fyzabad, on being relieved, furlough out of India for 18 months.

BOMBAY.

Captain W. E. JENNINGS, I.M.S., has been appointed Civil Surgeon at Shikarpur.

Captain A. HOOTON, I.M.S., has been appointed to act as Deputy Sanitary Commissioner for the Central Registration District.

Captain J. C. ROBERTSON, I.M.S., has been appointed on Plague duty at Karachi.

Captain JAMES JACKSON, I.M.S., Superintendent of the Central Prison, Yerrawda, is granted furlough for eighteen months, from the 29th April, 1899.

Captain THOMAS JACKSON, I.M.S., Superintendent, Central Prison, Hyderabad, to act as Superintendent, Central Prison, Yerrawda.

Lieutenant-Colonel W. P. CARSON, I.M.S., Port Surgeon, Aden, has been allowed an extension of furlough on medical certificate for six months.

Major R. J. BAKER, I.M.S., on relief by Major J. P. BARRY, I.M.S., on the 18th April, 1899, of the duties of Superintendent, Lunatic Asylum, Colaba, to act as Surgeon to the Gokaldas Tejpal Hospital, in addition to his own duties as Presidency Surgeon, Second District, and Marine Surgeon, during the absence on leave of Lieutenant-Colonel W. G. H. HENDERSON, I.M.S. Major J. P. BARRY, I.M.S., on return to duty to be Superintendent, Lunatic Asylum, Colaba.

Major H. W. STEVENSON, I.M.S., Civil Surgeon, Ahmednagar, has been allowed by Her Majesty's Secretary of State for India an extension of leave on medical certificate for six months.

To be member of the Poona Cantonment and Suburban Plague Committee. Lieutenant E. F. G. TUCKER, I.M.S.

Captain C. K. MORGAN, R.A.M.C., has been appointed on Plague duty at Poona.

Major R. J. WINDLE, R.A.M.C., has been appointed on Plague duty at Poona.

ASSAM.

Captain A. LEVENTON, I.M.S., Officiating Medical Officer, 43rd Gurkha Rifles, is, with the consent of the Military authorities, appointed to hold civil medical charge of the Manipur State, in addition to his military duties.

Captain H. S. WOOD, I.M.S., Medical Officer, 44th Gurkha Rifles, is, with the consent of the Military authorities, appointed to hold civil medical charge of the Naga Hills district, in addition to his military duties.

Major E. A. W. HALL, I.M.S., Officiating Civil Surgeon, Goalpara, is transferred to Darrang and placed in civil medical charge of that district.

Furlough for two years is granted to Major E. C. HARE, I.M.S., Civil Surgeon, Kamrup, with effect from the 1st April 1899.

Furlough for eight months is granted to Major J. W. U. MACNAMARA, I.M.S., Civil Surgeon, Darrang, with effect from the 1st April 1899.

Leave of absence for nine months, with effect from the 19th March 1899, is granted to Surgeon-Captain A. J. ELLIOT, M.D., F.R.C.S., of the Assam Valley Light Horse.

PUNJAB.

Captain H. G. MELVILLE, M.B., C.M., I.M.S. (Bengal), is appointed to officiate as Professor of Anatomy, Lahore Medical College, during the absence on furlough of Captain J. C. LAMONT.

Major R. J. MACNAMARA, I.M.S., Superintendent, Central Jail, Mong Rasul, has obtained furlough to Europe for eighteen months.

Captain G. F. W. BRAIDE, I.M.S., Superintendent, Central Jail, Lahore, has obtained furlough to Europe for one year.

Captain J. C. LAMONT, M.B., I.M.S. (Bengal), Professor of Anatomy, Lahore Medical College, is granted furlough out of India for eight months.

Military Assistant-Surgeon C. A. OWEN, Assistant to the Civil Surgeon, Lahore, is granted furlough out of India for one year, with effect from the 16th April 1899.

CENTRAL PROVINCES.

Major H. E. BANATWALA, I.M.S., Civil Surgeon, Betul, is transferred to Nimar.

Lieutenant-Colonel W. A. QUAYLE, I.M.S., Civil Surgeon, Nimar, is transferred to Jubbulpore.

MADRAS.

Lieutenant-Colonel BEVAN I.M.S., Madras, will officiate as District Principal Medical Officer of the Madras Command with temporary rank of Colonel with effect from the 10th March, during the absence on leave of Colonel Branfoot, the Principal Medical Officer, Rangoon District and Southern Shan States Command.

Lieutenant F. A. L. HAMMOND, I.M.S. (Madras), is replaced at the disposal of the Military Department.

BENGAL.

Dr. C. BANKS, Superintendent of Emigration and Protector of Emigrants, Calcutta, is allowed privilege leave for three months. Dr. J. L. HENDLEY, Civil Medical Officer of Puri, acts for him; and Assistant-Surgeon HARI MOHAN SEN is appointed temporarily to have medical charge of the same.

Major E. J. PECK, I.M.S., Civil Surgeon of Purneah, acts as Civil Surgeon during the absence, on leave, of Major F. S. PECK, I.M.S.

Major F. J. DRURY, M.B., I.M.S. (Bengal), Civil Surgeon, Chittagong, is appointed to be Professor of Pathology, Medical College, Calcutta.

The undermentioned Assistant-Surgeons of the Bengal Provincial Establishment are promoted from the first grade to the senior grade:—Assistant-Surgeons JADUB KRISTO SEN, BHOLA NATH PAI, MATI LAL MUKERJI, AKBAR KHAN, and AKSHOYA KUMAR PAI.

Assistant-Surgeon UPENDRA NATH SEN, in temporary medical charge of the district of Noakhali, is confirmed in that appointment.

Retired Assistant-Surgeon BULY CHUNDER SEN, who has been temporarily re-employed in Government service, is appointed temporarily to have medical charge of the civil station of Backerganj during the absence, on deputation, of Captain B. C. OLDHAM, I.M.S., or until further orders.

Captain B. H. DEARE made over charge of the Midnapore Central Jail to Mr. M. S. EMERSON on the afternoon of the 18th March 1899.

Major HEM CHANDRA BANERJI, I.M.S. (Bengal), placed temporarily at the disposal of the Government of Bengal, with effect from the date on which he may assume charge of his duties.

THERAPEUTICAL NOTES. *

THE TREATMENT ON Alopecia Areata.—Dr. Joseph Sprangenthal (*Buffalo Medical Journal*, November) reports a case of this obstinate affection successfully treated by the following application:

R.	Bichloride of mercury	...	...	20 grains;
	Glycerin	...	...	4 drachms;
	Eau de Cologne	...	...	18 ounces.

M.

He says: "Under this treatment not only did the baldness cease to spread, but fine downy hair began to spring up all over the bald patches. This at first was white but finally became more vigorous and the pigment returned.

Trigeminal Neuralgia.—Hirschkrone (*Gazzetta degli ospedali delle cliniche*, December 22nd) recommends the following:

R.	Extract of cannabis indica	...	...	7½ grains;
	Salicylic acid	...	...	75 "

M. To make ten powders.

Three powders to be taken daily.

For Phthysical Diarrhoea.—De Renzi (*Riforma medica*, December 23rd) recommends:

R.	Iodoform	...	...	30 grains;
	Tannin	...	...	60 "

M.

Divide into ten powders. From two to four to be taken daily.

For Phthysical Constipation.—The same author in the same journal recommends:

R.	Iodoform	...	...	30 grains;
	Naphthalin	...	...	30 to 60 "

M.

Divide into ten powders. From two to four to be taken daily.

For Mental Depression.

R.	Strychnine sulph.	...	...	gr. ʒ
	Quinine sulph.	...	...	gr. ss
	Extr. hyoscyami	...	...	gr. i-ss
	Ferri reducti	...	...	gr. i

M. For one pill. S. One pill t. i. d. —TULLY in *N. Y. Med. News*.**For Hysteria.**

R.	Ac. arseniosi	...	...	gr. ss
	Ferri sulphatis	...	...	gr. ss
	Ext. sambul	...	...	gr. ss
	Asafetide	...	...	gr. ss

M. Ft. pil. No. XX. One pill three times a day after meals.

For Pediculosis Pubis.

To avoid the eczema which may result from the use of mercurial ointment, a calomel ointment, 1 to 20, is recommended, or the following lotion:—

R.	Hydrargyri chlor. corros	...	...	part 1
	Spiritus	...	...	parts 100
	Aq. dest	...	...	parts 400

The ova can be killed by applications of hot vinegar, somewhat diluted, and scraped off with a metal comb.—*N. Y. Med. News*.

A PLAGUE SACRIFICE.

THE Park in Babu Anshotosh Dey's Lane, in the Jorasanko section of Calcutta, was the scene a few nights ago, says a vernacular contemporary, of a very large gathering of the *clan* and general society of the Hindu community for the purpose of making puja to the idol *Kalkitranta rupini subansana Kalika*, to whom votive offerings of fruits, flowers, and rice were made and prayers offered for the staying of the pest. The promoter and priest was Durga Dass Brolmachi, who was also the maker of the idol. The managers, who superintended all the arrangements, were Babus Ramanath Mandal and Mammatha Nath Roy. A spacious shaminia erected on the maidan was gaily decorated with bunting and foliage and brilliantly lighted. It was filled to its utmost capacity with enthusiastic and eager worshippers. Theatricals, *jutras*, and gymnastic exercises by amateurs provided entertainment after the due performance of all the religious exercises. Some thousands of Brahmins and the poor of the city were fed, and sweetmeats distributed.

TROUBLES OF A MEDICAL MISSIONARY.

PASTOR HAEGERT of the Bethel Santhal Mission writes to the *Indian Witness*:—Cattle disease is here on a visit and the lumentation in some villages over their dead oxen and cows is

great. In Dumoria the villagers had a meeting. All agreed that the blood-thirsty goddess Kali caused the trouble. To save their remaining cattle all promised to contribute to a big sacrifice to the villainous old goddess. Mohamedans, Hindus and Santhals all gave freely. The sacrifice was made and everybody hoped that their cattle was safe. The next few days the cattle died more than before, and the disappointment was great. I attended five oxen, four pulled through without much trouble. The fifth, a big fine ox, I fed with a bottle three days; then he recovered, and I shouted "Victory!" The next day a thunderstorm gave him a chill and relapse. Again I fed him with a bottle for one day, and now I think he has made up his mind to live. In my hospital I have four cases of sunstroke, and a blind child, blind both eyes.

HEALTH OF CALCUTTA PORT.

A RESOLUTION in the *Calcutta Gazette* gives some interesting figures regarding the health of the port during 1898. The number of European seamen who arrived at the port during the year was 20,401, against 19,608 in the previous year. The daily average number in port was 1,232, against 1,202 in 1897. The total number of admissions into hospital amounted to 897; the death-rate per mile was 15.42, against 21.63 in the year previous, and the quinquennial mean was 19.94. Including the deaths out of hospital, the death-rate per mile was 22.72 during the year, against 33.27, 40.92, and 31.44 in the three preceding years. Of the admissions into hospital, three were due to cholera, of which two ended fatally. There were 38 admissions from bowel-complaints, and none from small-pox. There were two admissions from sunstroke with one death. There were six cases of drowning during the year. There were altogether 122 deaths, 22 in and 100 out of hospital, among the native floating population, against 208 in 1897 and 219 in 1896, the death-rate per mile (4.76) being lower than that of the previous year, which was 8.11. Of this total, 49 deaths were from cholera, 16 of which occurred in hospital, against 116 deaths from this cause in 1897. There were no deaths from small-pox, 40 deaths from fever, and four from bowel-complaints.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the *Indian Medical Gazette* Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

ON Fractures and Dislocations. By Prof. Helferich. London: The New Sydenham Socy., 1899.

La Maladie de Garryon: par E. Odriezola. Paris: Garré et Naud, 1898. 8vo, pp. 220, 14 plates, 4 coloured. 18 francs.

Common Salt and the Prevention of Disease. By C. G. Gumpel. London: Swan Sonnenschein & Co., 1898.

On the Natural Immunity against Cholera. By C. G. Gumpel. London: Williams and Norgate, 1891.

Growing Children: their Clothes and Deformity. By E. Noble Smyth. London, 1899.

A New Forceps for Intestinal Anastomosis. By Dr. E. Luplace. Philadelphia, 1899.

The Sanitation of British Troops in India. By E. C. Freeman, Captain, R.A.M.C. London: Rahman Publishing Co., 1899.

Index Catalogue Library of Surgeon-General, U. S. Army, Vol. III.

Archives Röntgen Rays, Vol. III, 3, London.

American Text Book of Diseases of Children. By Dr. Starr. W. B. Saunders, Philadelphia.

Pharmacopoeia of the Kashmir State Hospitals, with Notes. By A. Miba, L.R.C.P. & S., F.R.S. &c., Kashmir, 1899.

Plague in India: an Impeachment and an Appeal. By C. G. Gumpel. London and Calcutta, 1899.

COMMUNICATIONS RECEIVED FROM:—

Lieutenant-Colonel C. H. Bennett, Madras; Major W. B. Bannerman, Madras; Captain W. J. Buchanan, B.A., M.D., Bhagalpur; Captain F. P. Maynard, M.D., D.R.N., Hazaribagh; Dr. D. D. Gupta, Calcutta; Major J. H. Tull-Walsh, Berhampur; Dr. J. Cantill, London; Surgeon-General R. Harvey, C.B., D.S.O., Simla; Captain J. K. Close, M.D., Bijnor; Captain C. Barry, Rangoon; Messrs. A. Raddick & Co., London; Messrs. Smith Stanistreet & Co., Calcutta; Lieutenant-Colonel P. J. Freyer, London; Captain L. Rogers, Muktesar, Kumaon; Captain A. E. Grant, Ootacamund; Messrs. W. Thacker & Co., London; Colonel K. McLeod, M.D., L.D., London.

Original Articles.

CAUSE AND PREVENTION OF HEAT APOPLEXY IN THE ARMY.

By C. J. McCARTIE, M.A., M.D., M. CH.,

LT.-COLONEL, I.M.S.,

39th Garhwal Rifle Regiment.

OVER a year ago Dr. Sambon contributed an important paper to the *British Medical Journal* on the effects of tropical heat. He showed that soldiers were far more liable to heat apoplexy than any other class.* Planters and others are able to go about their work in the sun at a temperature approaching 120°, whereas soldiers are often knocked over and killed at a temperature twenty degrees lower. Every year a number of soldiers die of heat apoplexy. He gives several instances in India of a large number of soldiers dropping down suddenly on the march and dying, when the temperature was by no means very high. Soldiers are killed by a temperature which has no effect on any one else.

From these undisputed facts he draws the extraordinary deduction that in these cases the soldiers do not die from what we call heat apoplexy, but from an infective disease, which he thinks probably due to some microbe. For this disease he revives the ancient name "Siriasis." He says it was known to the ancients by this name, because they attributed it to the influence of Sirius, the dog-star.

He also ventures the statement that heat alone, apart from the direct sun's rays, will not raise the temperature of the body.

His argument is—that the soldier dies at a certain temperature which does not affect the civilian, therefore his death cannot be due to the temperature. It seems plausible, until one remembers that the soldiers who suffer and the civilians who remain immune do not work under similar conditions.

In the hot weather the civilian has a thin twill cotton shirt, light, loose cotton trousers, cool socks, cool light shoes, a light gossamer coat worn open, a thick pith-hat coming down

his neck, and a thick umbrella. His clothing does not keep in the warmth of the body.

When the temperature of the air reaches, say 115°, the body temperature would run up to the same height, if it were not controlled by an automatic mechanism, which keeps the body at 98.4. The temperature is kept down by perspiration and its evaporation. The light and open clothing of the civilian allows the air to circulate around his body, to evaporate the perspiration, and to keep him cool.

Up to a certain point the natural mechanism for regulating the temperature will keep the body cool, *provided it is not interfered with*. But, if this mechanism is *prevented from acting*, the heat of the body *must* rise. This is exactly what happens in the case of the soldier. The air, which would evaporate the perspiration of his body and keep him cool, is excluded by his dress, so his temperature rises to the degree of heat fever or heat apoplexy.

Dr. Sambon states that heat alone will not raise the body temperature, but even he would probably agree that it must do so if evaporation is prevented by the dress, and the heat regulator thereby rendered inactive.

There are two reasons why the soldier suffers from a degree of heat which the civilian does not feel. He wears clothing which is unnecessarily warm, and which of itself adds to the heat of the body. But the chief reason is, that his clothes are so buttoned up and strapped down that the air cannot circulate about his body, the evaporation of the perspiration cannot go on, nature's apparatus for keeping him cool is not allowed to act; and, as a consequence, his temperature must rise. Not only does it rise, but the centre in the brain for regulating the heat may itself be paralysed by the fever and may never recover its function.

In the very hottest weather soldiers are seen wearing flannel shirts. Their khaki coats are thick, warm, nearly air and water-tight; and they are so buttoned up to the throat, and so strapped down, that no air can get under them. Then they have to wear woollen cholera-belts and woollen socks. Their woollen putties, besides adding to their warmth, prevent the air from circulating around their legs. Every workman in the world strips to his work except the soldier, who is trussed and swathed up as if his life depended on it.

In the campaign of 1897, I saw some British soldiers struck down by heat apoplexy. They all had woollen shirts and some had thick woollen under-vests as well. They were dressed as if for freezing winter weather.

In the hot weather campaigns of 1895 and 1897, I was much struck by the distress, exhaustion, fever, and deaths due to the unsuitability of the men's dress to the climate.

In August 1897 I was with a regiment marching to the frontier. At one stage sufficient coolies

* Sailors, as shown from the statistics of the Port Health Officer at Calcutta, are very much more liable to heat apoplexy in Calcutta than the soldiers in the fort which adjoins the harbour. These men are all of much the same age and class, but the soldier is compelled to wear a protective helmet, whereas the sailor's head-gear is notoriously defective.—Ed. J. M. G.

could not be obtained, and part of the baggage had to be carried by sepoy in mufti. Before the end of the march, nearly all the men in the ranks were utterly exhausted, and some of them had heat apoplexy. Their brothers in mufti, though carrying much greater weight, but wearing their loose, light, rational dress, were not in the least distressed. They were quite jolly, while the uniformed sepoy were so absolutely prostrated, that they would not be able to defend themselves if attacked.

In the hot weather you see the dooly-bearers carrying 64lbs. weight without distress, while soldiers in the ranks with only 30lbs. are prostrated and 'broken' by the heat. Look at the large number of cases of heat apoplexy amongst soldiers in 1897. If there were any cases amongst the followers in their native dress, I neither saw nor heard of them.

Not alone does the dress tend to induce heat apoplexy, but the belts and straps impede the circulation and respiration. Even officers feel this, and it is with a feeling of great relief that they remove their belts and putties at the end of a march.

It is not alone for heat apoplexy that the dress is responsible. By its closeness and warmth, it causes distress, fatigue, exhaustion, and fever which sap the men's strength and paralyse their energy.

Most deaths occur in the British ranks in the hot weather, and it may be taken as an axiom that *in India the British soldier dies of heat.*

The worst parts of the soldiers' dress are the belts and straps which go over his coat, and the first step in improving it should be to *do away with them all.* Here you have 4½lbs. of belts and pouches to carry a bayonet and seventy rounds of ammunition, which together weigh 8½lbs. Besides confining his coat, they prevent his having the use of eight additional pockets, and so he has to be supplied with a haversack with another strap across his chest.

In the hot weather the soldiers' dress should be a Norfolk jacket with four pockets, a loose trousers (without putties) with two pockets in front and two behind, a loose twill cotton shirt with two pockets. He would have a light knapsack in which would be carried the contents of the haversack and usually the greater part of his ammunition. When an action is expected, his ammunition can be carried in his ten pockets. The water-bottle can be hooked on the coat or knapsack, the bayonet hang on a frog on the trousers' waist belt, or on the coat. In the knapsack he can carry *twice* as much ammunition and food as he can take with the present equipment. He could often go out from camp to fight without the knapsack, and he is at all times equipped, sleeping or walking. On the march he could go without his coat or wear it open.

I am reminded by the name Siriasis that the Ancient Egyptians also ascribed the annual rise of the Nile to the influence of the star Sirius. We now attribute it to the influence of the sun in melting the snows, so that there seems some connection between the two after all.

I think we must still adhere to the rather commonplace and obvious explanation that heat apoplexy is due to the heat of the sun, and have to give up the more fanciful and fascinating theories that it is caused by the dog-star or the microbe.

By adopting for the soldier the dress and the precaution which every civilian adopts for himself, heat apoplexy will become as rare in the army as in civil life. And by the introduction of a rational dress, the energy and the efficiency of the soldier will be doubled.

INOCULATION OF AN ENTIRE COMMUNITY WITH HAFFKINE'S PLAGUE VACCINE.

By

C. H. BENNETT, M.D., & W. B. BANNERMAN, M.D.,

LT.-COL., I.M.S.,

MAJOR, I.M.S.,

26th Regt., Madras Infy. Dy. Sany. Commsr., Madras.

Up to the present time no demonstration has been forthcoming of the effect produced on a self-contained community, such as a regiment, by wholesale inoculation with Haffkine's plague prophylactic, so the following description of what happened in one such case may be of interest. The account now about to be given derives additional interest from the fact that the individuals concerned were under close observation during the period referred to, thus rendering the record unusually accurate.

Plague cases began to be reported in Belgaum, (a town of 40,700 inhabitants) in October, 1897; five deaths occurring in that month, 111 in November, 156 in December, and 226 in January, after which, the epidemic rapidly subsided to 50 in February, and an insignificant number in the following months, till in May it ceased. The 26th Regiment of Madras Infantry were stationed in their lines close to the cantonment and city during this time, and suffered severely. The first reported case among them took place on the 12th of November, when Sepoy 2,224, Govindaswami, was brought to hospital and died the same day. Next day another sepoy was attacked and died. On the 15th a drummer was attacked, and on the 17th the disease appeared among the followers. By the 21st thirteen attacks had been reported from the lines, four of these being among sepoy. On the

22nd November, B Company went into camp, followed on the 23rd by C and G, and portions of A, D and F Companies. By the 28th, the whole regiment was in camp, and the lines were being disinfected by perchloride of mercury solution, whitewashing, and removal of tiles from the roofs. During this transition period 15 more attacks took place, six being among sepoys. In the ten days following complete removal to camp, 13 sepoys and 20 among families and followers were attacked. Then, as was to be expected, the cases gradually became fewer, and ceased by the end of the year. During this time (12th November to 31st December 1897) the following had occurred :—

Among sepoys ..	34 cases with 22 deaths = 64	7 per cent.
Among women ...	20 " " 10 " = 50.0 "	
Among children..	16 " " 9 " = 56.25 "	
Among followers	8 " " 8 " = 100.0 "	
Total..	78 " " 49 " = 62.8 "	

Inoculation was begun in the camps on the 24th December 1897. Little difficulty was experienced in persuading the men to consent to be operated on, when it was explained to them that they would be free to return to their lines after inoculation. The example set by General Rolland, the Officer Commanding, and the Medical Officer, who were operated on in front of the men, no doubt also helped to remove prejudice, and 229 sepoys were inoculated during the morning. This was practically the whole of the men off duty that day in the Hindalgi camp. Next day the men who had been on duty the previous day were operated on, and all those without wives or families allowed to return to the lines. Those in other camps and the families were speedily inoculated, and were then permitted to return also. The return was complete by the 30th December 1897. A few more inoculations continued to be done up to 6th January, among followers, children, etc., but by the end of the year they may be said to have been complete. The total operated on was 1,665, out of a population of 1,746 living in the lines at that date. The 81 not operated on were infants, women far advanced in pregnancy, and the sick in hospital chiefly, though one solitary sepoy has, up to the present time, refused to submit to operation. After this date two cases occurred in January; both had been inoculated and both recovered. No cases were reported for the next six months, though, as we have shown above, the epidemic was at its height in the city and cantonment in January. That this practical immunity of the regiment was not due merely to the disinfection of the lines, will, we think, be manifest to anyone studying the occurrences during the second epidemic from July to December 1898, which will now be described. It should here be stated that the men were, after inoculation, allowed to visit the cantonment and city freely, up to 4th July 1898.

The second epidemic in Belgauu began in June, reached its height in October and thereafter declined till January, when it ceased. The table given below shows the numbers of deaths from plague, reported in the city and cantonment, month by month, contrasted with the attacks in the regiment.

Dates.	Deaths reported from City and Cantonment.	Attacks in the Regiment.
June, 1898	14	0
July, "	215	1
August, "	304	2
September, "	698	2
October, "	999	4
November, "	275	2
December, "	65	1

From the above it is manifest that the numbers attacked in the regiment kept pace exactly with the severity of the epidemic in the neighbouring town, rising and declining with it. We have seen how heavily the regiment suffered during the first epidemic, so their escape at this time requires explanation. The only measures taken by the authorities were placing the cantonment and city "out of bounds" for the troops after 4th July, and the disinfection of the few huts that became infected. Both these measures had been taken in the first outbreak and had proved totally inadequate. How then did the regiment escape during the second outbreak? The men of the regiment were so satisfied with the effect produced by the first inoculation, that they made no objection to being reinoculated in August, and this operation was so thoroughly performed that practically no one in the lines was left unprotected. This latter circumstance deprives us of the complete demonstration afforded by the presence of an unprotected population living amongst those protected; but those living on the spot, at least, had no doubt why they escaped. Of the 12 persons attacked during this period, three were not inoculated, and they all died; nine had been operated on, and of these, three died and six recovered. The history of the three uninoculated persons is interesting. The first case was a sepoy who was not inoculated, because it was supposed he had been attacked by plague during the first epidemic, though from the history this is more than doubtful. The second was the wife of a sepoy who had just joined her husband a few days previous to the development of the disease, and before inoculation could be performed. The third was an European officer, who probably trusted to the comparative immunity enjoyed by his race during the present outbreak of plague in India.

The above results seem to point to the truth of Haffkine's expressed opinion, that in his prophylactic we have a means of controlling an epidemic of plague, and converting it into a manifestation of sporadic cases only.

AN OUTBREAK OF SEVERE DIARRHŒA TRACED TO FOOD.

BY

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THE following outbreak of severe diarrhœa attended in many cases with suppression of urine is here described for the purpose of calling attention to the severe nature of that form of sudden watery diarrhœa not uncommon in the hot weather in India, and to emphasise the importance of paying great attention to the quality of all articles of food supplied to prisoners at all times.

On the 21st March 1899, this year's new rice was for the first time issued to the prisoners, and at the same time the stock of maize, purchased last year, had become extremely weevil-eaten. The last few bags were being issued, and these were the worst of all. The considerable increase in the Jail population had caused last year's stock of rice, wheat and maize to be exhausted a few weeks before the time calculated upon. The new wheat had not come in to the bazar in any quantity. It therefore became a question of buying the new wheat, and new wheat is not considered wholesome, or continuing to use the old maize after careful selection and rejection of spoiled grains (some 40 maunds were thus lost out of 100). I decided to use the carefully picked old maize. The rice was new, that is, it was purchased in end of December, and was at least three months old; but, where possible, I prefer rice a couple of months older to begin with.

It so happened therefore that on the 21st March the rice issued to the prisoners was too new and the maize too old. The other articles of food were, I believe, above suspicion. Five different pulses were being issued in regular rotation; they were all in good condition and boiled in soft filtered water. The vegetables were good and abundant, cabbage, mangle-wurzel, tomatoes, &c; there were no *sāgs* such as jailors dearly love. The water was good (*v. below*).

The following is a brief account of the series of cases:—

1ST CASE.—Bhadru Dharin, height 5ft. 6in.; weight 123lbs.; slept in Ward 12; worked in mehtar gang inside; had not been outside of Jail for over three years; previous health good; came to hospital on 23rd March at 5-30 A.M.; passing thin very watery stools with urine; vomiting frequent; partially collapsed, and cold. When seen by me at 6-30, he was somewhat warmer; no stools during past hour, pulse very small and weak. At 11-30 A.M., two stools, but no urine since 6 A.M. At 2 P.M. he was very restless, passed several more stools, loose, watery and containing bile, but no urine. Tongue clean. Ice, rum, dry cupping over kidneys. Temperature 6 P.M. was 99°; still no urine, but stools less frequent. 24th

March, condition much the same, but had passed a few drops of water about 2 A.M. after 21 hours' suppression. Next day, the stools were semi-solid; on the 4th day, some mucus was passed. After this the stools improved daily; discharged on 6th April.

2ND CASE.—Nazir Kasai, old man over 50 years. Worked in Manufacturing Department as a tailor; slept in Ward No. 6; came to hospital at 5-30 A.M. along with Case No. 1; passing loose watery stools, no urine; body cold; pulse imperceptible almost, but the voice was surprisingly strong. At 11 A.M. collapsed; has passed frequent stools with vomiting of green bilious matter. Tried cupping, brandy, &c; no cramps; complaints of pain in abdomen. 2 P.M.—Tongue dirty, very restless, pulse very weak and intermitting, great thirst, condition very low, no urine since early morning, no cramps, stools thin, watery, but contained bile, and had not the appearance of rice water. Died at 4 P.M., after about 12 hours' illness. *Previous history*—Previous admissions to hospital for "sore tongue," dyspepsia and diarrhœa. *Post-mortem*.—Pleural adhesions; stomach empty; heart somewhat enlarged (for such a small old man); spleen enlarged, flat (8"×5"×2") with a hard cartilage-like plate on under surface; lungs healthy; liver normal; kidneys distinctly congested; intestines small, thin pale atrophic, no ulceration; large bowel contained thin fecal matter, drab coloured, no rice water. Patches of old healed-up ulceration about sigmoid flexure.

3RD CASE.—Mālu Mundal, aged 32, from convalescent gang (a chronic ulcer case); slept in Ward 15; came on 24th March to hospital with profuse watery diarrhœa, with vomiting, which lasted for about 24 hours; no suppression of urine; healthy stools on 3rd day.

4TH CASE.—Ram Kissen, aged 40. Ward 16; worked on brickfield outside; loose watery stools on 24th March; no suppression of urine; no cramps; only pain in abdomen. Healthy formed stool on 4th day.

5TH CASE.—Firingi Ojha, aged 50. Ward 10; worked as a cook; one day's violent diarrhœa; loose watery stools; no suppression of urine; no stools for two days. Then healthy on 4th day. Came to hospital 24th March.

6TH CASE.—Sukul Kandy, aged 15. Light labour; from juvenile ward; one day's violent diarrhœa; 15 to 20 loose watery stools; no suppression of urine. Came to hospital March 24th; healthy stools on 3rd day; no vomiting; no cramps.

7TH CASE.—Sk Angul, aged 27. Ward 2; worked in factory; loose violent diarrhœa for one day; then mucus and blood for one day, which disappeared after small doses of soda sulphate. Healthy formed stool on 5th April; no suppression of urine. 26th March.

8TH CASE.—Mahomed Faruk, aged 40. Road work inside; slept in Ward 13. On 27th March loose violent diarrhœa; black coffee-like vomit; next day regular meat washings stools; given soda sulphate; soft stools on 3rd day; no suppression of urine. Previous history of dysentery 3 months ago.

9TH CASE.—Bhagul Chamar, aged 50. Light labour; Ward No. 8. On 28th March loose watery diarrhœa and vomiting for 48 hours; then no stools; on 4th day soft stools with mucus; given soda sulphate; formed healthy stools on 6th day; no suppression of urine.

10TH CASE.—Sakal Dosadh; No. 7 Ward; wheat grinding; violent watery diarrhœa and vomiting on morning of 29th March. No suppression of urine; healthy stools on 3rd day.

11TH CASE.—Luckman Dome, aged 30. Factory; slept in No. 1 Ward; violent watery diarrhœa on 30th March; pulse very low; vomiting; no urine; with all the later stools till 4 P.M.; suppression for at least 10 hours. Very restless, great thirst, no cramps, stools loose, contained thin fecal matter, no rice water. Evening temperature was 100°. Next morning passing urine freely, but it contained albumen and lasts for 2 days. Stools soft. Healthy stools on 5th day.

12TH CASE.—Allad Mahatur, aged 50. No. 4 Ward. Work in factory, tentering. Previous admissions to hospital for loss of weight, bad sore mouth, ague, &c. April 3rd, 6 A.M., came to hospital with profuse watery diarrhœa, no urine, vomiting, pulse small, tongue dry, thirst intense. Very restless, voice good, no cramps, no rice water stools, all were thin and pale yellow or very watery. Evening temperature 100.4°F. 4th April, stools still frequent but less watery; says he passed a few drops of urine about 4 A.M.; condition still low, restless, great thirst, no cramps, skin of hands shrivelled; cupped thrice over loins; at 4 P.M. certainly passed urine, which contained albumen; suppression lasted either 24 or 36 hours. After this steady improvement; urine remained albuminous for 3 days. On 7th April stools healthy.

13TH CASE.—Sham Sher Singh, aged 55. Light labour; slept in Ward 15. In Jail since November 1898; previous attack of diarrhœa in December, and of flatulent dyspepsia in January. On 4th April came to hospital in early morning with profuse, loose, watery stools, and no urine; vomiting of bilious matter; great thirst; no cramps; stools yellow; contained bile and finely dissolved fecal matter. At 5 P.M. still no urine; stools less frequent. 5th April, two stools at night; urine passed early in morning; much pain in belly; the back of tongue thickly furred; tip red raw, hiccough persistent; no fever. 6th April, stools thin and soft; urine a few ounces, sp. gr. 1018; contained albumen; remained for 2 or 3 days; discharged 15th April.

14TH CASE.—Puna Dhobi, aged 26, from segregation ward came to Jail only 6 days before. Came to hospital on 4th April; violent watery diarrhœa; no urine with the later stools, from about 10 A.M. till 5 A.M. next morning, 19 hours. No cramps; stools not rice-water-like; vomiting slight; thirst. Evening temperature 99°F.; next day stools loose and soft; urine freely passed; rapid recovery.

15TH CASE.—Chet Lal Singh, aged 25. Ward 10. At work on oil-mill (mustard oil) over one month inside Jail. On 5th April admitted for violent watery diarrhœa with vomiting; pains in legs, doubtful cramps, very frequent purging; no rice water stools; urine at first suppressed; passed after 8 hours. 6th April, thin stools with plenty of mucus. First urine scanty; contained albumen sp. gr. 1016; urine soon became free of albumen. 7th April, soft stools; discharged on 16th April.

16TH CASE.—Rucha Chamar, aged 30. Ward 8 P. W. D. work inside. In Jail 3 months. Has been in indifferent health, emaciated. April 5th, at 8 A.M., admitted with profuse watery diarrhœa and nausea; later vomiting; urine passed freely with each stool at first; then none for several hours (6 hours); no cramps; vomiting soon ceased. Next day stools soft; then constipation; healthy stools on 4th day.

17TH CASE.—Maugal Tetwa, aged 30. Worked in factory; slept in Ward 6; over a year in Jail. Previous history good; only 1 admission for tonsillitis. 5th April, since dawn has passed about 6 watery stools, with last 2 stools no urine (this is certain); no cramps, nausea, no vomiting, thirst. No urine passed with many stools from 7 A.M. to 4 P.M., about 9 hours; first urine examined no albumen; rapid recovery.

18TH CASE.—Etwarí Rajwar, aged 40, a delicate old man. Ward 16. Had previous attack of watery diarrhœa on 3rd March (was then at work cleaning pulse). 5th April, loose, watery, frequent stools; urine said to have been passed with earlier stools; none with stools from 9 A.M. till 3 P.M. (6 hours). Watery vomit; next day constipation; after that soft stools for some days; discharged 16th April.

19TH CASE.—Hyder Shaik, aged 36. Received from Purnea on 9th March last in good health; height 5ft. 4in.; weight 113lbs. At work-grinding *makai*. Ward 7. Thin, watery stools on 6th April, thirst, restlessness, vomiting, no cramps; suppression of urine for 14 hours. Next day soft stools; rapid recovery.

20TH CASE.—Palia, an aged female life prisoner; reputed age 76. On 3rd April loose, watery stools, very weak and collapsed; urine doubtful. Next day better stools, urine free, pulse improved, slow and gradual recovery; remained permanently in hospital, as she is practically bed-ridden.

21ST CASE.—Jabu Sonar, aged 34; height 5ft. 2in.; weight 107lbs.; over one month in Jail. On 6th April violent, watery diarrhœa; no cramps; urine plenty. Rapid recovery; Ward 7.

22ND CASE.—Haru Benia, a convict overseer; slept in Ward 6; loose watery stools on morning of 7th April, not severe; rapid recovery. Ward 6.

There were therefore in this outbreak 22 cases of severe watery diarrhœa, of which only one was fatal, the old man, second case. They came in on the following dates:—March 23rd, two; March 24th, four; March 25th none; March 26th, one; March 27th, 28th, 29th, 30th, one daily; then none till April 3rd, on which 2 cases; two more on 4th April; four on 5th April; 2 mild cases on 6th; and the last case on 7th April. The cases were all very similar but varied in intensity and in the fact that in eleven cases there was suppression of urine for longer or shorter periods. In the first case suppression (empty bladder proved by use of catheter) lasted 21 hours; in second till death in 12 hours; then came a run of eight cases in which urine passed freely; then on 30th March, a case of suppression for 10 hours; next on April 3rd a case for 26 hours; one for 24 hours on next day; after that other cases for 19, 8, 6, 9, 6 and 14 hours respectively.

In many cases it could be ascertained that urine passed freely or in some quantity with the earlier stools; then came a period of more or less frequent stools and no urine. In nearly every case the re-establishment of the urine was felt by the patients themselves as the turning point in the attack. In all the course of the diarrhœa was the same; violent frequent purging of thin, watery stools began every case; in no case was there anything resembling the rice-water stools of cholera. The stools after a day became thicker, soon soft and then healthy and formed. Microscopic examination of these thin watery stools showed abundance of epithelium, starch grains, particles of husk of grain, &c. The pulse was generally small and easily compressible; the voice was always fairly strong, the eyes often sunken, and in one case the skin of hands much shrivelled (he recovered). Thirst was always intense, restlessness was marked in several cases, pain in abdomen complained of frequently, no cramps in any case. In several cases there was a slight elevation of temperature towards evening of the first day of illness. In a few cases dysenteric symptoms supervened, as also occurs in those cases of gastro-enteric infection known as infantile diarrhœa to which these attacks were much alike. The tongue was generally coated with a bright red tip and edges. Hiccough was noted in a few cases; in one it was persistent for about 24 hours. Albumen was

found in the urine passed after suppression in a few cases; and casts were noted in one case examined microscopically. After the violent onset of the diarrhoea it was common to find constipation for one or two days, but more commonly the watery purging gave way to soft stools which soon became solid. Convalescence was in all cases rapid, in two or three days all felt well again and asked for solid food.

Etiology and diagnosis.—There was no one form of labour incriminated; cases came in impartially from all forms. Out of the whole series, only one came from gangs at work outside the Jail, only one from maize-grinding; so that self-induced disease could not account for this outbreak.

As regards diagnosis, one's first thought naturally was of cholera, and to be on the safe side I ordered all cases outside to the special segregation hospital recently got ready outside the Jail walls.

Against the cholera view are the following arguments:—(1) The fact that loose watery diarrhoea is not an uncommon phenomenon in the hot weather. (2) I have seen here and in other jails seen violent diarrhoea produced by eating raw grain, unripe food, &c. Major Whitwell, I.M.S., when medical officer here in 1894, specially noted some twenty such cases. In 1893, in Midnapur Central Jail, I saw 125 cases of diarrhoea occur in one day, after a violent cyclone which drove the cooks out of the kitchen, after which the food was issued in a half-cooked condition. In dry hot weather I have seen cases which I attributed to careless prisoners drinking huge quantities of not very cool water before or with their evening meal. (3) Cholera has not been inside this Jail for over ten years. (4) Careful inquiry from the Civil Surgeon showed that no cholera was known in the town nor in the neighbourhood. (5) There are no villages within a couple of miles of the Jail on all sides, so the agency of flies in carrying the infection may be dismissed. (6) The first cases attacked had not been outside the Jail walls for over three years. (7) The absence of true cholera stools, the typical rice-water appearance was never present. (8) The cramps and low weak voice were absent. (9) The very low death-rate, one case in 22. (10) The dropping way the cases came in, their coming from all parts of the Jail, certainly suggested some common cause—the water for example. That the water was not to blame is, I believe, certain. In the first place all the water comes from the Municipal Water Works, and although the low state of the river Ganges makes the water question at present an acute one in Bhagalpur, yet at present the water filtration is more than usually efficient, due, I believe, to the fact that owing to the few hours the water in the hydrants is open, the filtration is now slow and effectual, and moreover it so happened that just before this outbreak I had

completed my monthly series of bacteriological tests and found that the water then supplied contained many fewer microbe colonies than usual, about 20 to 30 per cubic centimetre. Before this I usually found 30 to 50. Since the outbreak I have again tested the water and found only 30 microbes per cubic centimetre. This is well under Koch's standard, and shows that the filtration is effectual. Again, there was no cholera in the town though supplied with the same water, and the waterworks being in an isolated position and walled in are little liable to infection. Therefore I confidently excluded the water theory, and made no alteration in the supply. Milk and *dahi* could be excluded, as they were chiefly used for the sick and convalescents who were not attacked.

There remains therefore the food. As above-mentioned we were using, at it happened, bad weevil-eaten maize and good but new rice (just over three months old). The other food stuffs were, I think, above suspicion. As regards the rice I had to use this three months old rice, though usually I prefer and arrange to have it at least four or six months old when issue begins, but I think the following fact will show that the rice may be acquitted of any share in the production of this outbreak. Since the enlargement of this Jail we have received many Bengali prisoners from districts outside our circle, and some 350 (one-fifth of the total population) of these were receiving Bengal scale diet, *i.e.*, "rice at both meals," yet not a single case occurred among the Bengali prisoners. This leaves the blame altogether upon the *makai*. Many of the grains, even after careful selection, were quite hollow, mere husks in fact, so that the *atta* was largely composed of finely ground husk.* This being the case, it is not surprising that some 22 cases of violent diarrhoea should occur among some 1,680 prisoners. As soon as I had come to this conclusion I at once forbade the issue of this *makai*; it was not, however, till the 5th of April that I could get ready other food stuffs. On that date I issued only very finely ground old wheat *atta*, and some specially good fine rice which I had obtained some months ago from Rajshahye through the help of Lieutenant-Colonel French-Mullen. The good effect was immediate and marked. On the day after the issue of the new food there were only two mild cases, the next

* Remembering Colonel G. Hall's experience in N.-W. P. to which I called attention some time ago (*Indian Medical Gazette*, December 1898, p. 529), I examined by the chloroform test some samples of maize where grind-stones covered with mud to weighten them were still in use. I found on the average three grains per drachm of *atta*. This, with 12ozs. of *atta*, means about half an ounce of mud daily eaten. I have almost entirely abolished these mud grind-stones, but prisoners prefer them, as they are weightier and do the task work quicker. I am gradually collecting heavy grind-stones (about 80lbs each). These are difficult to obtain, but are so heavy that mud need not be added. (80lb. for 2 men, 60lb. stones for one man.)

day one, and since then this severe form of diarrhoea has entirely ceased, a fact which I think proves conclusively that the bad maize was the offending article and the cause of the outbreak.

It is probable that the enteritis or diarrhoea in these cases was due to direct irritation of the gastro-enteric tract by the husks of the maize which were too abundant in the *atta*. Raw grains, we all know, give rise to similar attacks of severe diarrhoea, which may in part be due to some irritant juice or alkaloid in the fresh husk. It may be remembered that the first recorded great epidemic of cholera in Lord Hastings' camp in 1817 was at the time attributed by a Dr. Tytler* to the use of an unwholesome crop of rice,—a fact which at least points to the use of new rice being potent for evil. It is probable that as in other affections some predisposing causes must also co-exist, otherwise out of 1,680 prisoners more would have been attacked, and there was evidence in several cases of previous attacks of dyspepsia, dysentery, &c.

CEREBRO-SPINAL FEVER IN ALIPUR CENTRAL JAIL.

By

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THE first outbreak, or, at least the one of which any record exists, occurred in the year 1885. Subsequently, during the next decade, there were nine further outbreaks. After a cessation for three successive years, the fever broke out, for the eleventh time, at the latter end of 1898. There were three cases only, all occurring in the month of November between the 13th and the 26th. The mortality during the year up to the end of October was exceedingly low, only 17, against 29 and 27 in 1897 and 1896 respectively. The general sickness, too, was correspondingly low; it was 52·86 and 41·45 in September and October respectively in 1898 against 65·61 and 66·77 in September and October 1897. But both the mortality and the sickness rose suddenly in November. From an average of 1·7 of the preceding ten months the mortality rose to 14 in November, and the sickness rose from 41·45 in October to 68·61. The special conditions to note in this connection were—(1) The excessive overcrowding that prevailed during the month; the average population for the month was 1,988·66, whereas there was accommodation in the jail only for 1804; the excess number fluctuated between 100 and 200, the average of the excess number standing at 184·66;

(2) the sudden change in the weather, the temperature falling from 91°F. maximum and 78°F. minimum in October to 81°F. maximum and 71°F. minimum in November; (3) the greater dampness of the year; (4) the entire absence of meat or fish from the dietary from March to November; and (5) the large number of weakly and debilitated subjects who had been long suffering from chronic illness and had managed somehow to pass through the warmer months. Of the fourteen deaths in November, four were from tubercular phthisis, two from dysentery, one from pneumonia, one from pleurisy, one from tubercular peritonitis, one from epilepsy, one from hæmorrhage into the brain, an accident, and three from cerebro-spinal fever.

Particulars of the three cases of cerebro-spinal fever are given in a tabular form below.

Generalization.—All the three cases were Hindu males, past middle age; two belonged to high caste, and one to low caste; one was a man of certain position in society, one followed an independent calling, and the third was a servant; two were Bengalis and one an up-country man. In jail all three had light work, as their health was indifferent. No. 1, however, had to expose himself to the sun as an overseer. Nos. 2 and 3 were always indoor and under shade. They were all long term prisoners; one had passed over seven years in the jail the other two over eight months each. The conditions of environment were exceedingly bad, I mean the topographic; the climatic and domestic conditions were bad too. The overcrowding was excessive. While there was accommodation only for 1,804, the actual population fluctuated between 1,972 and 2,038. The change in the weather was sudden; it became cold and damp and misty; chilly in the morning and night, close and warm in the day. The arrangements in the sleeping barracks were bad; each of the barracks contained fifty-six beds, placed in rows 4 deep; the capacity per head was 648 cubic feet. One open *gumlah* for the solid and one iron tub for the liquid, placed at one corner formed the night latrine. Beds came close to it; some within three feet of it. The atmosphere about it was anything but pure. The diet of the prisoners was sufficient in quantity; it was deficient in animal food. This was the case specially during this year. Formerly it used to be given regularly. The loss of weight of the general body of prisoners was greatest in the beginning of the year and least in the second and third quarters. With the commencement of the cold weather it again began to increase. The weight of the three prisoners was far below the standard. They were much broken down in health; one from fever and dysentery, one from piles, and the third from scurvy, dysentery, mumps and fever. The symptoms in all were alike. The temperature in none

* N. Chever's Medical Jurisprudence, p. 301.

Case I.	Case II.	Case III.	
Dhananjoy Karmakar ...	Iswar Chandra Chakraborty ...	Gya Panday ...	Name.
50 years ...	52 years ...	75 years ...	Age.
Male ...	Male ...	Male ...	Sex.
Hindu Sudra ...	Hindu Brahmin ...	Hindu Brahmin ...	Caste.
Chittagong ...	Calcutta ...	N.-W. Provinces ...	Country.
Goldsmith ...	Landholder ...	Durwan ...	Occupation outside.
Viceman, night watchman, overseer	Bag sewing, Hospital attendant ...	Cook ...	Occupation inside.
14-2-92 ...	11-2-98 ...	18-3-98 ...	Date of admission in jail.
10 years ...	1 year ...	1 year ...	Period of sentence.
6 years and 9 months ...	9 months and 8 days ...	8 months and 11 days ...	Time in jail.
102lbs. to 120lbs. to 109lbs.	115lbs. to 118lbs.	140lbs. to 147lbs. to 143lbs.	Weight in jail.
Bad—Scurvy, Dysentery, Mumps, Indifferent—Piles, anaemia Fever.	Indifferent ...	Indifferent ...	Previous health.
Indifferent ...	Indifferent ...	Indifferent ...	Health on admission.
Midnight, 13-11-98	Evening, 17-11-98	Afternoon, 26-11-98	Date of admission into Hospital.
<p>Symptoms—development course.</p> <p>Case I. Felt feverish in the evening; at midnight found rolling on the ground, screaming and groaning with spasms of extremities; eyes congested; skin hot; jaws set, pulse full, frequent, thin, imperceptible; breathing hurried and stertorous. T. 97°. Ultimately coma.</p> <p>Case II. Began with T. 99°6' and pain in the testicle. T. rose to 102°; pain in the head, sickness and vomiting; delirium with grinding of jaws; trembling of extremities; bowels constipated; bladder paralysed. Pulse 120, Resp. 40, hard and stertorous; coma and great prostration.</p> <p>Case III. Ushered in with T. 101°6'; 2nd day, Mg. T. 101°; 3rd day, T. 101°8'; pulse full; pain in chest and back; 3rd day, T. same, breathing harsh; 4th day, at 1-45 A.M., coma set in suddenly; twitching and trembling of extremities; eyes red and congested with a squint; pupils contracted. Pulse 120, Resp. 50, stertorous. Retention of urine.</p>			
Cold to head; diaphoretics	Bromides, purgatives	Blisters to nape of neck, catheterization	Treatment
Death at 5-30 A.M., same day 10½ hours	Death at 8-30 P.M., 19-11-98 48 hours	Death at 10-45 A.M., 29-11-98. 66 hours.	Result.
<p>Morbid anatomy.</p> <p>Case I. Body thin and poorly nourished; brain and cord; dura mater adherent to the skull; membranes intensely congested; covered with recent lymph on the top; ventricles filled with effusion. Pleural adherent, both lungs studded over with tubercles; Pericardium contained 2 oz. of serum; right side of heart filled with ante-mortem clots; liver and spleen enlarged; large intestine pigmented; with cicatrices of old sore.</p> <p>Case II. Body thin; scalp congested; membranes deeply so; brain at top and base, cord at lumbar region on its posterior surface were thickly covered with soft yellow lymph; serum in large quantity in the ventricles and between the membranes; both lungs intensely congested; heart distended with ante-mortem clots; liver congested and soft; left kidney atrophied.</p> <p>Case III. Body fairly well nourished; scalp congested; membranes deeply so; veins engorged and tortuous; thick layers of recent lymph, both at top and base of brain dipping into the sulci and running along the vessels; cord covered with lymph on its posterior surface; large quantity of serum between the membranes both of brain and cord; lungs deeply congested, partially hepatised; big ante-mortem clots in right fluid blood in left side of heart; liver anyloid; spleen enlarged, congested.</p>			
<p>Strength exceeded accommodation by 187, 234 and 168 on the 13th, 17th and 26th respectively.</p> <p>Conditions—</p> <p>(1) <i>Climate</i>.—Days were cold and damp: T. 75°—79°, 78°—79°, and 73°—74° respectively.</p> <p>(2) <i>Topographic</i>.—The jail stands on the bank of an old silted up river, now a mere nullah dirty in the extreme; overcrowded with buildings, and shaded by trees and jungles.</p> <p>(3) <i>Domestic</i>.—No. 1 slept in Barrack 19, 2nd floor, with 55 others, his bed was within 7 ft. of night latrine; No. 2, in a room with 5 others, his bed 15 ft. off from latrine; No. 3, with 55 others in ground floor, his bed within 8 ft. of night latrine.</p> <p>(4) <i>Personal</i>.—Fair.</p>			Jail life: accommodation and conditions of environment.

rose above 102°F. The brain and the spinal cord were primarily and chiefly affected, exhibiting characteristic phenomena; pains in the head and along the spine; delirium, sickness and vomiting, spasms and twitchings; congestion of eyes with squint; paralysis of the bladder; difficult and laboured respiration; and coma at the end. The onset in one case was sudden and in the other two rather gradual. All three proved fatal; and within three days since onset. One died within 10½ hours. The man was literally struck down dead; a typical case of the variety known as "fondryant." Treatment proved abortive in each case. As were the symptoms so was the morbid anatomy the same in all. Marked inflammation of the membranes of the brain and cord with profuse effusions and exudations; congestion of the lungs, liver and spleen; and distension of the heart with ante-mortem clots.

What could have been the cause of this rather sudden outbreak? There was not a single case for three years; no case during the first ten months of the year. The prisoners had been living almost under the same conditions this year as in the three years immediately preceding it, which were free from cerebro-spinal fever.

The topographic aspect, the conditions of labour, the immediate surroundings, the personal and much of the domestic hygiene were much the same. Two factors, however, stand boldly out. They were as conspicuous by their presence this year as they were by their absence in the three preceding years, and again by this presence in each of the years from 1885 to 1894 when an outbreak occurred. These factors were: (1) the unusual and excessive overcrowding; and (2) the absence of animal food from the dietary. The first seems to have influenced the outbreak more than the second.

The general features of the disease would point to the fact that its ultimate cause is probably a micro-organism belonging to the class of "facultative" parasites. That it is infective is not at all borne out by the facts.

Particulars of former epidemics are not available, but with a view to arrive at some conclusion as to their causation a statement is given below showing the mortality in the jail from 1885 to 1890 with special reference to accommodation and average population, and with particulars as to the admissions and deaths from cerebro-spinal fever, chest complaints and remittent fever.

STATEMENT showing the mortality in the Alipur Central Jail from 1885 to 1889 with special reference to accommodation and average population and with particulars as to the admissions and deaths from cerebro-spinal fever, chest complaints and remittent fever.

YEAR.	Cerebro-spinal fever.		Chest complaints.		Remittent fever.		Death from all other causes.	Total deaths.	Accommodation.	Average population.	REMARKS.	
	A.	D.	A.	D.	A.	D.						
1885	...	12	13	120	14	90	19	66	112	1,742	1,788-37	
1886	...	17	9	283	17	14	5	15	46	1,742	1,838-87	
1887	...	13	8	220	18	9	2	21	49	1,734	1,576-33	Maximum on one occasion was 1,902, and it was above the accommodation in every month of the year.
1888	...	8	5	176	17	10	2	34	58	1,740	1,607-43	Maximum far above the accommodation every month.
1889	...	7	4	116	16	22	3	23	46	1,740	1,757-23	
1890	...	6	6	168	27	29	1	32	66	1,744	1,746-57	
1891	...	11	11	193	22	19	2	34	69	1,740	1,752-65	
1892	...	5	5	213	27	11	3	29	64	1,744	1,771-43	
1893	...	2	2	121	14	3	1	23	40	1,744	1,770-92	
1894	...	1	1	207	33	7	1	29	64	1,744	1,719-87	Maximum far above the accommodation every month.
1895	138	14	3	...	8	22	1,744	1,648-94	
1896	144	19	1	...	17	36	1,746	1,592-05	
1897	157	17	15	1	16	34	1,900	1,780-36	
1898	...	3	3	207	16	1	1	12	32*	1,804†	1,988-66	

* Up to December 16th.

† In November.

The statement shows that ever since it was first discovered in 1885, there had been an outbreak of cerebro-spinal fever in the jail every

year regularly, except in the three years immediately preceding the present one. Probably there had been outbreaks previous to

1885, but no records exist about them. In the first three years the outbreaks were severe; in 1885 it was the severest of all. In 1885 and 1886 the population exceeded the capacity by 46 and 96 on the average. In 1887, though the average was less, the maximum on one occasion exceeded the capacity by 168; and, except in 1888 and 1894, in the rest of the years, when cerebro-spinal fever prevailed, the average population exceeded the capacity more or less; the maximum in every month of the year, not excepting the years 1888 and 1894, exceeding the capacity by over 100. The jail enclosure had always been too much encumbered with godown, shops, factories, etc., and the ventilation obstructed by innumerable partition wall and big trees. In 1895, 1896, and 1897 there were no outbreaks, and in these years the accommodation exceeded the population by 96, 154 and 120 respectively. This is significant. In 1898 the conditions were otherwise; the excess of population over accommodation had been great throughout the year. In November there was 1988-66 population for 1,804 capacity.

THE ALCOHOLIC LIQUORS OF INDIA.

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It has been contended, in certain quarters, that the natives of India have learnt the vice of drunkenness from Europeans. That this is an error founded on insufficient knowledge can be easily made clear. Passages in the *Mahābhārata* (an epic poem dealing with events 1200 B.C., but put together about 1,000 years later), etc., show that drunkenness was common in ancient India; and this may be gathered also from the old Hindu law books, which forbid the use of wine (e.g. *Manāva-Dhārma-Sāstra*, xi., 146 ff). In the *Abhila-Shithārata-Cintāmani*, a Sanskrit manual for kings and princelings, A.D. 1128, though most indecent and foolish amusements are allowed, drinking spirits etc., is prohibited; but several different kinds of spirits are referred to (see Dr. Watt's *Dictionary of Economic Products*, vol. v, pp. 509, 510).

Tavernier, in the seventeenth century (*Travels in India*), mentions a palm-wine spirit largely drunk by the idolators of India at their feasts. Spirits from palm juice and from rice (*Sura*) are alluded to by John Huyghen van Linschoten as having been largely consumed in Southern and Western India 300 years ago, and he complains of the Portuguese soldiers acquiring habits of drinking spirits from the natives.

Sura is also mentioned in the *Institutes of Manu*, a work which, according to most Sanskrit scholars, was written about 2,000 years ago. In the *Ordinances of Manu*, the text of which, as it now stands, dates by the latest estimate between 100 and 500 A.D., there are frequent references to the drinking of spirituous liquors to excess, so that it is evident that this must have been a common offence, and the twice-born (Brahmans) are often urged to avoid the temptation. Three kinds are described, that made from sugar (molasses), from ground rice, and the flowers of the honey-tree, *Māhuā* (*Bassia latifolia*)—liquors which down to the present day are those most commonly consumed by the natives of India.

Dr. U. C. Dutt, in his *Materia Medica of the Hindus*, says that the later Sanskrit writers describe thirteen kinds of distilled liquors, one or other of which was widely used in their time. In Sanskrit works a spirit distilled from grapes, *Māddhikā*, is distinguished from that from sugar-cane (called *Sidhu*), from rice (called *Sura*), from barley (*Kohālā*), from wheat (*Mādhulikā*), etc., while *Vārūnī* (translated brandy) occurs in the *Institutes of Manu*, lecture xi, 147, and three kinds of spirits are distinguished in lecture xi, 95.

In spite of the *Khorān* prohibition of alcohol to Mohammedans, in the reign of Akbar, spirit-drinking was not uncommon among the court grandees (Abul Fazl in *Ain-i-Akbārī*, Blockman's trans., i, 60-70).

From the above and other sources, and from our knowledge of the multitudinous substances employed in various parts of the country for the preparation of alcoholic liquors, we see that drinking customs were widespread and not an adoption of an European habit. We may also rightly conclude with Dr. Watt that the means of procuring fermentation in a saccharine or malted liquor are and have been for long much more extensively understood in India than in Europe generally (see Watt's *Dict. E. P.*, vol. vi, pt. iii, pp. 331, 332)*.

How far, however, the undoubted present increase of intemperance in the majority of our Indian cities, towns, cantonments, markets and fairs, and other gatherings where multitudes assemble in vaster numbers than are known in Europe, may be traceable to our modern methods of licensing public houses, thus giving the latter, as it were, the stamp of Government approval, and thereby bringing temptation under the immediate cognisance of the people otherwise known to be remarkably abstemious, and that moreover, in forms of much more potent alcoholic strength than were known to their fathers, is a question entirely foreign to the purpose of this paper.

* Indeed, the aboriginal and wild tribes of India the most inaccessible to civilising influences, are notorious drunkards.

The alcoholic liquors in use at the present day in India may be usefully divided into three great classes: (1) *Beers*—fermented beverages prepared either from malted or unmalted grain (cereals); (2) *Wines*—fermented liquors from fruits, flowers, sap, or other parts of plants; and (3) *Spirits*—liquors obtained by distillation of any of the preparations of the other two classes. There is a fourth class—a fermented “wine” prepared from animal substances, such as Koumiss, the drink of the Tartars, Circassians and Eastern Russians, made from fermented mare’s milk, and now prepared in Europe and America from cow and goat milk for medicinal purposes. But it, as well as its congener, Kephir, appears to be unknown in India. Neither is any special notice needed of such commingled liquors as milk-punch, sherry-whey, etc. Of course the principle of fermentation is the same in all, *viz.*, a saccharine substance, original or converted from starch, etc., as sucrose, glucose, dextrose, lactose, fructose, etc., capable of conversion into alcohol in the presence of an enzyme-yielding yeast;* this alcohol being distilled over, with other volatile agents, goes to constitute the third class, the “strength” or intoxicating powers of which depend on the proportion of water which comes over at the same time, and which may be reduced by repeating the process one or more times. Any of these, however, may be combined with certain narcotic or fermentable barks, spices, etc.

It ought to be noted that, although many of the intoxicant beverages are named specifically in the vernacular, the generic Urdu name of *Sháráb* (from the Persian), *Mádh* or *Mádhū* in Bengali, and *Arrak* or *Dáru* (from Arabic and Persian) in Hindi, as well as *Sura*, from the Sanskrit, are frequently given to all alcoholic liquors in general, and are apt to cause confusion when speaking of them individually. In the text whenever specific titles are available they are given under each description.

I.—BEERS.

Among the most extensively used alcoholic beverages in India, beers take the most prominent place, and this mainly because of their ease in preparation, and also because, in this conservative country, they have been handed down from former ages. The sacred sacrificial

* The alcoholic fermentation of sugar by yeast has hitherto been regarded as directly associated with, and dependent upon, the living action of the yeast cell, but Dr. Buchner, a German chemist, has succeeded in extracting from yeast a liquid which, after thorough filtration, is capable of exciting alcoholic fermentation under practically the same conditions as the living yeast. This fluid becomes inert if heated to 50° C.; and the evidence seems to point to a newly discovered ferment, which Dr. Buchner has called *Zymase*, being of a proteid nature. It is suggested that fermentation, as usually observed, is due to the action of this ferment as excreted by the living organism (*The Medical Press*, May 1897).

drink of the ancient Aryans, the *Soma*, was probably the most ancient beer known. The beers known in India may be divided into four sections or varieties.

1. *European Malt Liquors*.—British, German, Austrian and Italian imported malt liquors prepared from malted grain (chiefly barley)*, and hops, as ale, beer, porter, stout, cooper.

2. *The Pilsener Beers*, which appear to be manufactured from rice, are innocent of hops, and may owe their bitterness and colour to some foreign substance.

3. *Indian-made European Malt Liquors*.—Indian-made European beers of the breweries in the Himalayas, Neilgherries, Rawalpindi and Quetta, etc. It is said that in order to prevent beer turning sour in a hot climate the alcohol is in excess of that generally found in home-brewed ales, and reaches as high as five and six per cent. vol. in vol. (Hehir’s *Hygiene*). Scotch ales, however, were formerly very alcoholic, but more “scientific” methods of brewing have of late years greatly reduced the strength.

Most of the consumption of these three sections is by Europeans, and its extent may be judged from the following extract from Mr. O’Conor’s *Financial and Commercial Statistics of British India*, fourth issue, 1897: “During the last five years the quantity of beer imported into India averaged nearly 3,000,000 gallons annually, and the quantity brewed in India during the same period averaged nearly 6,000,000 gallons, the local production being thus double the quantity imported. Last year (1896) 6,313,946 gallons were brewed in this country, of which more than half was bought by the Army Commissariat Department. The Army drinks fifty-four per cent. of the country-made beer under contract, and a considerable portion of the remainder is also consumed by soldiers outside the Army contract.”

4. *Native Beers*.—These appear to be of two kinds: *first*, those prepared from soaked, raw or pre-malted grain, fermentation being either spontaneous (*i.e.*, without special addition of a yeast) or from the unwashed jars containing ferment of former brews; and *secondly*, those from cooked (boiled) grain, fermented with a yeast generally specially prepared and varying with the locality in its ingredients. Thus in certain parts of Bengal (as in Nadiya), the commonest domestic beverage among the lower classes is *Amani*, a cooling drink in the hot weather, prepared by

* In many British breweries nearly 50 per cent. of beer is made from sugar, rice, maize, or other substance than barley (mangel-wurzel has been suggested); and, moreover, five barrels are now produced from the quarter of malt instead of four, as formerly, and these five have only about half the quantity of hops that were before used for four barrels. The Americans make beer largely from maize meal and maize malt. In Germany, other than in Bavaria, the following are used to a considerable extent: wheat, oats, rice, maize and even potato starch. The best colonial beer is made in Tasmania, whence it is shipped in frozen blocks to Australia and India.

allowing water in which boiled rice has been steeped to become sour. The alcoholic strength is feeble.*

A second and stronger beer, more commonly known in India generally as *Pachwai*, and drunk by low-caste husbandmen and aboriginal labourers, as well as the wild tribes generally, is a fermented rice liquor prepared somewhat like the *Nágá Khézú*, and sold for about an anna (one penny) a quart bottle. The Angámi Nágás on our North-east Assam frontier, I ascertain, prepare their beer as follows:—

Zú, or *Tengi Zú* or *Péta Mádhú* (Assamese—Rice-flour Liquor).—Raw rice is soaked in water an hour or so; drained off and dried for an hour; then washed in a pot and redrained. It is then pounded up, boiling-hot water poured thereon, and put aside for twenty-four hours. Now a certain quantity of water is poured in and the mixture preserved in an earthen jar (*ghurra*) after adding a fistful of malted *dhán* (unhusked rice) dried and powdered. The *Zú* is ready in three or four days and drunk unstrained out of a bamboo jug or a gourd cup, the sediment being supped with a bamboo spoon. It is a milky liquid of sweetish, bitter flavour, and declared to be a refreshing drink. Its intoxicant quality increases after the fourth day.

Khézu, or *Koséri Mádhú* (Assamese—Cachari Liquor).—The stronger liquor: the rice is boiled and spread out to cool. Then a yeast is added, which is specially prepared in three or four days from jungle roots and rice powder, and is sold in white, chalky-looking cakes the size of one's palm. It is mixed thoroughly and placed aside in a covered basket. Three or four days later it is put into a *ghurra* with a certain quantity of water. The fermentation is complete in three or four hours, when it is strained through a basket sieve, and the *Khézu* is ready for consumption.

The fermentation of native beers is generally brought about through the aid of some astringent plant, usually several, which may either play the part of hops, or be connected in some way with causing or facilitating fermentation.

It is interesting to observe how widespread throughout India the manufacture of beer is, what varieties of grain have been thus independently utilised, and what ingenuity has been exercised in exciting fermentation. Various cereals are employed, as most species of millet, barley, maize (*bhootá*), wheat, etc.; but rice is the principal one and the most extensively used.

(1) Thus from malted rice we have the Chinese *Shamshee*, the Japanese *Sake* and the Burmese *Shamshoo*. In Singapore this beer is also known

as *Shamshoo*; the Khyens and Karens of Burmah, as well as other Burmese, know it as *Conjee*, and the Kakhians call it *Sherú*; the Angámi and Assam Frontier Nágás (*Sémas*, *Aos*, *Lôtas*, etc.) and the Chins and Lushais have their *Zú* (malted) and *Khézu* (yeasted and stronger); while the Nepalese and Gurkhas name it *Jhár*. In Chota Nagpur it goes by the name of *Hurria* or *Hurria mádhú* from the earthen jars in which it is prepared; * in Assam, *Láo pani* (= *Láo* water) said to be named from the *Láo*, or Kuddoo, or Calabash vessels in which it is stored; and in Ceylon it is called *Kanje* (Sinhalese); while in India generally, as already observed, it is known as *Pachwai*. I do not know how far the water alone in which rice has been boiled (rice water), called *Mahr*, *conjee* or *pitch*, has been fermented into a beer. All the aboriginal and hill tribes appear to manufacture a beer. Rice beer is drunk, among others, by the Lushais and other Eastern Frontier tribes, by the Lepchas of the Darjeeling Hills, the Tibetans of Sikkim, the Sonthals and Kols of Chota Nagpur, and the inhabitants of the Simla Hills.†

(2) Next to rice the millets enjoy a special selection. Malted millet is known as *puisht*. Thus, the *Máruá* beer of the inhabitants of Sikkim, said to be a pleasant drink, and imbibed through a straw from a bamboo jug, is prepared from the *Máruá* or *Rági* millet (Eleusine Coracana). In Poona, Mysore and the Mahratta country (South India), where the *Rági* forms the staple food of four-fifths of the people, *bojah* or *bojali* beer is brewed therefrom. Here also *bojah* is brewed from malted *Jowári* or *Juár* (Sorghum Vulgare), and *bháng* substituted for hops. The Nágás also are said to use certain millets for their *Zú*; probably all the six or seven varieties known are cultivated and utilised. *Zú* is also brewed from the half-dozen varieties of "Job's tears," known locally as *Ké-sí* or *Ka-sí* (Coix Lachryma).

(3) *Maize* or *bhoota* is employed, intermixed with a bitter principle or spices, to make beer among the Simla and other Hill tribes.

(4) *Wheat* beer is known as *Mádhú-líka*, and (5) *Barley* beer as *Kohála*. The last two are not extensive.

It is interesting to note that millets are brewed elsewhere than in India. *Bousa*, for instance, a strong popular intoxicant beer made from the flour of *Teff* (*Poa Abyssinica*) and from the *durra* or *dourra* millet (Sorghum Vulgare, chiefly), is extensively consumed by the natives in Nubia, Abyssinia and other parts of Africa, including the Kaffir races of South Africa. The Russian

* The Bengali custom of eating a *chota hazari* or morning meal of stale boiled rice steeped over night in water (the *páto-bháth*) may prove one of the sources of the cholera and bowel disorder so prevalent among them at certain seasons, when the conditions for microbic growth are most favourable.

* An interesting photograph of a village public-house in Singbhum, taken by the author, may be seen in the December number of the *Wide World Magazine*.

† It is interesting to note that the Boksons, who inhabit the foot of the Sewalik range of hills bordering the Doon, do not ordinarily permit their women folk to indulge in intoxicants.

drink, *Kwas* or *Quass*, a thick, sour beverage not unlike the *Bousa*, is made from mixed and fermented barley and rye flours.

II.—WINES AND OTHER ALLIED FERMENTED LIQUORS.

These may be classed under four great heads:—

1. *Fruit Wines*.—(1) From *Grapes* (chiefly *Vitis Vinifera*).—We have first (a) *European or Australian imported wines* (properly so called), as Champagne, Port, Sherry, Madeira, Clarets (Beaune, Burgundy, Bordeaux, Chianti and a host of Italian, French, German and Australian clarets), besides liqueurs (Vermouth, fruit brandies, British wines, etc.), which are spiced, tinctured, or variously mixed vinous, fructuous and spirituous liquors. Cider and cider champagne might also be included here; perry, I believe, is unknown.* Second (b) *Indian-manufactured European wines*, which are not extensive and may be said to be confined to Kashmir. Here, although indigenous vines had long been cultivated, French varieties were imported by the State, and under Italian experts in 1890, red and white wines of "very superior quality" were manufactured, obtaining gold medals and high commendations at the Calcutta and Indo-Colonial (London) Exhibitions. And third (c) *Native grape wines*, which are also rare, although viticulture can be traced in India for 3000 years (Dr. Watts). These are made from grapes in Persia (*Anguri Sharáb*), where the wine of Shiraz became famous, Afghanistan, Beluchistan, Sind (?) and the Punjab—chiefly in Pesháwar and Kanáwar (where it is known as *Sheo*), as well as in Kashmir.

(2) From *Raisins* a wine for Hindus (*Kishmishi-Sharáb*) is made in Persia, Afghanistan and the Punjab. Other fruit wines are prepared from—

(3) *The fruit of the Jámun* (*Eugenia Jambolana*). In Goa a "port" is thus manufactured.

(4) *Dates*—in Sind and Bombay.

(5) From *Pineapples*—a "champagne" is made in Myanong, British Burmah.

(6) *The Phalsa fruit* (*Grewia Asiatica*), grown in Bengal and North-West Provinces, is fermented.

(7) A fermented liquor is obtained from the fruits of the *Amala* or *Amlaki*, Emblic myrobalan (*Phyllanthus emblica*).

† Large quantities of "Clarets" are manufactured in England from inferior French wine and rough cider, and coloured with turnsol or cochineal. "Champagne" is extensively produced from rhubarb stalks, gooseberries and sugar; and other "wines" are manufactured from sugar and the refuse husk or mark of the grape, in such quantities that Dr. Letheby declares that "a great part of the wine of France and Germany has ceased to be the juice of the grape at all." In point of fact, he says, the processes of blending, softening, fortifying, sweetening, plastering, etc., etc., are carried on to such an extent that "it is hardly possible to obtain a sample of genuine wine, even at first hand."

(8) Recently a "*Zú*" (beer), probably a wine, said to be of a pleasant sweetish flavour and the colour of claret with a taste much resembling burgundy (!), has been discovered among the eastern independent Nágás. It is prepared from an undetermined species of red berry. This red "*Zú*" is named *Kussi*, and, I learn, is not unknown among the Angamis. It is not to be confounded with the Red *Zú* due to coloration from the coarse red Nágá rice.

(9) In the West Indies and Congo a "*Vino di banana*" is made from the plantain (*Musa sapientum*). Information of it in India is wanted.

2. *Fermented Liquors from the Flowers of certain Plants*.—(1) The *Máhu-a* (*Bassia Latifolia* and allied species); extensively collected all over India, chiefly used for distilling. (2) The flower heads of the *Kádum* (*Anthocephalus Cadumba*). (3) The flowers of *Rhododendron Arboreum*, common among the Himalayan and other mountainous tracts, are sweet and sub-acid, and if eaten in large quantities, intoxicant. The milk of cattle feeding thereon is rendered poisonous and so is the honey collected therefrom by bees at certain seasons. Question if they are fermented or not.

3. *Fermented Liquors from Leaves and Twigs of Plants*.—(1) *Cannabis Sativa* (*Bháng* and *Háshish*) in the Punjab and North-West Provinces. Commonly favoured as a "cooling drink" by the Sikhs, and by the Chámars and other allied low castes.

4. *Sap Wines*.—The fermented juice of the following: (1) *The common Sugar-Cane Ukh* or *Gunná* (*Saccharum Officinatum* and several varieties), extensively grown all over India. The fermented liquor is called in Sanskrit *Sidhu*; that from palms is distinguished as *Váruni*. (2) *Indian Date Palm* (*Phoenix Sylvestris*). The *Khajur rus* is extracted chiefly in Bengal, Mysore, and North-West Provinces. (3) *The Bartree* or *Tál*, Palmyra Palm (*Borassus Flabelliformis*). The *Tári* or Toddy obtained from tapping the flower stalks and leafed stem, in Behar, North-West Provinces, Western India and Burmah. The last two are also extensively used as yeast in baking bread. (4) *Cocou-nut Palm* or *Nárial* (*Cocos Nucifera*); chiefly (?) South India and Bengal. (5) *Indian Sago Palm* (*Caryota Urens*). The toddy is tapped from the flower stalk and stem in Ceylon, Orissa, Madras and Bombay. The following are used to a very much lesser extent: (6) From the juice of the common *Mádár* or *Ák* (*Calotropis Gigantea*), the intoxicant liquor *Bar* is prepared by the tribes in the Western Ghats (Watt's, vol. ii, p. 47, sec. 188). Some more information is needed on this, as the juice is exceedingly acrid. (7) The root of the *Neem* (*Melia Azadirachta*) is also tapped and the juice fermented.

In England, formerly, the spruce-fir, birch, maple (*Acer. saccharinum*) and ash-trees were tapped and their juice used for so-called "beer" making. The Siberians use birch bark as a ferment when their yeast is not obtainable.

III.—SPIRITS OR DISTILLED ALCOHOLIC LIQUORS.

These may be divided into three classes:—

1. *European imported Spirits*.—Whisky, brandy, rum, gin, etc. During 1888-89, 1,119,367 gallons of spirits, paying a custom duty of Rs. 482,854 were imported into British India. There was an increase in consumption of 142 per cent. in eighteen years, the alcoholic strength being, however, weaker. The recent annual imports must be near 1,500,000 gallons. Much of these in the form of rum is consumed in the Army. Following the evil example set in Europe it appears that there has been a steady increase of late in the consumption of methylated spirits (rectified spirits mixed with 10 per cent. pyroxalic spirit) in Bengal. This abuse is to be prevented by the new rules issued under the new Sea Customs Act.

2. *Indian-manufactured European Spirits*.—This consists almost entirely of rum, the Cossipore (Bengal), and Shajehanpore (North-West Provinces) distilleries being among the best known. Much of the rum goes to the Army, regular and irregular, Native as well as European—the Gurkha and Sikh regiments and military police corps being also supplied, mostly in established canteens.

3. *Native Spirits*.—At the least some thirty-two substances are known to be employed in India at the present day for the manufacture of *Arak* or native spirits, and it is surprising what ingenuity has been exercised by the natives in their selection. It is stated that country spirits (*Máhuá* liquor?), which are fast displacing the consumption of country rum in Calcutta, contributes nearly one-half of the entire excise revenue of Bengal (1897). We may examine the principal ones in the order of their importance. The principle is of course the sugar contained therein, whether free or converted (as in malting), which is fermented and the alcohol then distilled.

Parriah or common *Arak* is a very unwholesome liquor drunk by certain lower classes of Hindus. It is often prepared from coarse jaggery (*gūr*), spoilt toddy, bad rice, inferior *máhuá*, etc., and is made more intoxicating by the addition of hemp leaves (*Bháng*), poppy-heads (opium), the juice of stramonium, etc. It is evil smelling and strong flavoured and is known among European soldiers under the euphonious title of "Sweet William," or, more vulgarly, "Billee Stink."

(1) *Máhuá* or *Mówah*.—The flowers of the *Bassia Latifolia* or *Bassia Longifolia* (in South India) and allied species. *Gūr* is sometimes added to increase the alcoholic strength during fermentation. A single distillation is 60 per cent. to 90 per cent. under proof. A second distil may average 25 per cent. below proof.† Extensively consumed in Rajputana, North-West Provinces and Oudh, Western Bengal, Central Provinces, North and South Bombay, and less so in the Punjab. The Bombay or *Uran Máhuá* spirit is double distilled (*benda*) and "nearly as strong as brandy," and on being poured from one glass to another gives a proper "head" or froth, without which the Bombay toppers will not have it (Watt).

(2) *Sugar-Cane*.—The expressed juice of the *Saccharum officinarum* and allied species. Rum distilled direct from the juice or from the uncrystallisable residue, Molasses (*ráb* or *gūr*), the former being recognised as superior.

(3) *Rice*.—*Oryza sativa* and numerous varieties. *Sura* was mentioned in the *Institutes of Manu*, about 2000 years ago; and 300 years ago its demoralising effect on the Portuguese Army in India was complained of. It is the commonest form of *Arak*, and is distilled from rice beer or *Pachwai*. It is called also *Dési Sháráb* (country spirit), and in Assam and elsewhere, *Phatika*, and is almost as simply made as rice beer itself. Like the beer, it is known in China as *Sham-Shee*, and in Burmah and Singapore as *Sham-shao*. A rice "whisky" is manufactured in Manipur from malted rice, and some Manipur Nágás distil a spirit called *Zoháro* from their *Khe-á*.

(4) *The Palmyra* or *Toddy Palm* (*Borassus flabelliformis*).—The toddy or *tári*, i.e., sap, distilled, "Palm wine spirit."

(5) *Cocoanut Palm* (*Cocos nucifera*).—The toddy distilled.

(6) *Wild Date Palm* (*Phoenix sylvestris*).—A "Rum" from the toddy or sap juice, or from the molasses (uncrystallisable residue of date sugar).

(7) *The Grape* (*Vitis vinifera*).—Coarse brandy from the grape juice, known as *Ángūr Arak* or *Sháráb*, is made in Pesháwar, in the Punjab. In Kanáwar, on the Sutlej, a superior grape brandy is distilled, while Kashmere also makes a cognac. In Afghanistan, Persia and the Punjab a brandy is made from raisins (*Kishmishi Arak*).

(8) *The Date Fruit Palm*.—From the date fruits a Date "Rum" is distilled (Watt, vol. vi, pt. iii, p. 334).

(9) *Máruá* or *Rági* (*Eleusine croacana*).—A spirit known as *bojah* or *bojali* is distilled from

sen coast, with *Sura* or palm wine by the admixture or even a distillation of the *Stinging Sea-blubber*.

† Proof spirit contains 49.24 per cent. by weight of absolute alcohol.

* A peculiarly abominable and pernicious spirit, known as *Fool Rack*, used to be prepared, on certain parts of the

the grain beer in Southern India (Poona) (Watt, vol. iii, p. 241, and vol. v, p. 326).

(10) *Barley* (*Hordeum Vulgare*).—A whisky (*Arak*), from the beer, in Lahoul.

(11) *Juár* or *Jowári* (*Sorghum Vulgare*).—The Karens of Burmah distil a kind of "whisky" from the grain.

(12) *Jámoon* or *Jáman* (*Eugenia jambolana*).—Spirit distilled from the ripe fruit.

(13) *Akanadi* (*Cissampelos Pareira*).—An ardent spirit is prepared from the root in Garhwal (Watt, vol. v, p. 326).

(14) *Támáku* (*Nicotiana Tabacum*).—An extraordinary intoxicating liquor is prepared by the Chin-Lushais from *Tobacco*. It is related of an unsuspecting police-officer that on his first visit to a village, the head men approached him with the customary "stirrup cups," which he was led to understand could not be refused without offence. Besides the usual *Zú* (rice beer), a strange liquor was presented to be slightly sipped. To the horror of the wild men the policeman, in duty bound, drained the draught at a gulp, and immediately thereafter fell down unconscious, when of course they all fled, believing they had killed him. Medical aid, however, was at hand, and he survived to caution the unwary. He had drained the tobacco drink prepared from their ladies' *hookas*, and meant only to be tasted homœopathically—a sort of fluid pipe or smoke in fact. This extraordinary indulgence is also common to the *Náyás*, *Kookies*, and neighbouring frontier tribes.

FERMENTERS, NARCOTISERS AND FLAVOURING AGENTS.

The substances used in India to either cause the fermentation or to increase the narcotic property of beers, spirits and fermented liquors generally, are rather numerous. They may also, like hops and essences, impart peculiar flavours and odours ("bouquets"). Chief among these are:—

(1) *Hops*.—Dried strobiles of *Humulus Lupulus* (imported). Used as a fermenting and narcotic flavouring agent by European breweries. Also for yeast, in Army bakeries, etc.

(2) *Cocculus Indicus*.—The seeds of *Anamirta Cocculus* or *Paniculata*—*Kakmári*, which contain the poisonous principle picrotoxin (medicinal dose $\frac{1}{16}$ to $\frac{1}{8}$ grain), and are intensely bitter and intoxicant. Employed as a substitute for hops in manufacture or adulteration of European beers (the porter or beer being first reduced by addition of salt and water) and to increase the intoxicating effect of country spirits, etc., in Bombay and elsewhere. The large imports to Europe cannot be traced after landing (Husband's *Forensic Medicine*. See also Lyon's *Medical Jurisprudence for India*, p. 215). Used as a fish poison (intoxicant). Probably

the barks or leaves, etc., of several (perhaps two dozen) other fish poisons are also so used (for these see Dr. Watt, vol. v, p. 327, and *The Asian*, 27th January, 1893). Most of these owe their intoxicant property to the bitter principle, *Saponin*.

(3) *Bháng*.—The leaves of *Cannabis Sativa* or Indian Hemp. The preparations of Indian Hemp are: (a) *Gánjá*, the agglutinated, resinous, female flowering tops. The powdered *Gánjá* is stronger, and is called *Chúr* or *Rora*. *Gánjá* is the chief narcotic of *Cannabis Indica* in Bengal Assam, North-West Provinces, Central Provinces, Bombay and Madras. (b) *Chárás* or *Chárus*, the resin on the leaves, young twigs, and on the bark of stems and young fruits. Chiefly used in the Punjab, Sind, etc., and in the hill tracts, and largely imported from Chinese-Turkistan. (c) *Bháng* or *Siddhi*, *Sabji* or *Sabzi*, the mature leaves, and in some places fruits and young twigs also, obtained chiefly from the wild plant all over India.

Chárás, which is the strongest of the three preparations, and *Gánjá* are smoked; while *Bháng*, the weakest of the three, is used in the preparation of the green intoxicating beverage *Hashish*, and, along with nux vomica, poppy-seeds, dhatura, etc., in the manufacture of the narcotic sweetmeat known as *Májún* or *Májūm*, which is consumed in all Mohammedan countries as Turkey, Arabia, Egypt, India. It is suspected that *Bháng* is used to increase the intoxicating properties of beers, besides native liquors.* One of the effects of *Cannabis* is homicidal violence, especially that form of multiple homicide known as "running amuck."

(4) *Dhatúra*.—The powder or fumes of seeds of the poisonous wild *Datura Fastuosa* and other species of *Stramonium* (*Solanaceæ*)—the famous narcotic drug used by the *Thugs*. The smoke is collected over a charcoal fire in empty vessels before these are filled with date palm juice, etc. Effects similar to *Belladonna* and *Hyoscyamus*. Aconite root (*Bish* or *Bikh*), *Aconitum ferox*, is also occasionally used to increase the intoxicating powers of liquors.

(5) *Nux Vomica*—*Kuchila* or *Kūchla-ka-Máláng*, the seeds of *Strychnos Nux Vomica* and probably of the parasitic *Viscum Monoicum* (in Cuttack, Orissa). It is "unknown" to what use the bulk of the imports to European countries is put, says Dr. Watt, although it is suspected that it is sometimes used by brewers to give the bitter taste to ales. Strychnine is the alkaloid of *Nux Vomica* and is probably the bitterest substance known, and can therefore be

* The Ceylon Government are now adopting prohibitionary measures against *Opium*, *Bháng* and *Gánjá*. The importation of the last two are altogether prohibited under heavy penalties, while the duty on *Opium* is raised to Rs. 100 per pound, the sale to persons under fifteen years of age being prohibited (*Indian Medical Record*, p. 114, 1st February 1898).

used in minute quantities (medicinal dose, $\frac{1}{30}$ to $\frac{1}{2}$ grain). *Nux Vomica* also contains "Brucine" which is likewise bitter, and a stimulant and convulsant.

(6) *Opium*.—The juice obtained by incision from unripe capsules of *Papaver Somniferum* spontaneously inspissated. Of its dozen poisonous alkaloids, morphine is the chief (dose, $\frac{1}{2}$ to $\frac{1}{4}$ grain). The native preparations are four: (1) *Opium*, *Afīm*, crude and consumed as such (dose, $\frac{1}{2}$ to 3 grains). (2) *Post* or *Kuknār* (Persian name of the Poppy), a drink prepared from the capsules and consumed in many parts of India. *Opium* is smoked in two preparations. (3) *Mádák* made by boiling down and inspissating the juice of opium or *Kapha* or *Kafa* (which is the juice collected on rags in Behar); and (4) *Chándu*—*Opium* or *Kafa* boiled down, distilled and prepared in the Chinese fashion. How far opium enters into alcoholic drinks is unknown.

(7) *Tobacco*.—Leaves of *Nicotiana Tabacum*. *Támáku* is chewed (*Khainé T.*) or smoked (*píné T.*) or snuffed (*nás T.*), the latter mostly in the Carnatic. It is either plain (*sádá T.*) or spice or scented (*Khambira T.*) or prepared for the *hooká* with *gūr*, molasses and scents (*gúráku*). The following native spices are used or mixing: *jatamami*, *chharila*, *Sugand-wala*, and *Sugand-kokilá*. The superior Punjaubi *Khambira-gúráku* has the following ingredients: Preserved apples, conserve of roses (*gūlhánd*), dried clippings of *pán* or betel leaves (*panri*), sandalwood and another scented wood, *muskh bála*, cardamoms (*elaichi*), the essence or *Arok* of the flowers of *Pandanus*, wild jujubes (*Kokanber*), and occasionally the pulp of the pod of *amaltás* (*Cassia Fistula*). A cheaper kind is made merely with sandalwood, wild sloe fruit (*bér*) and gugal gum (*Balsam-odendron*). In the North-West Provinces, *rák*, or impure carbonate of soda, is largely mixed to "improve" interior tobacco *gúráku*.

Infused tobacco is added to spirits as gin and whisky to increase their toxicity; or the store vessels may be treated with the smoke in the manner of *Datura*, but of this we have no information.

(8) The bark of the *Babūl* root (*Accacia Arabica* and two other allied species) is largely used to flavour native spirits, *Arak*, rum, etc., and assist fermentation of sugar, probably in part owing to its tannin precipitating the albuminous matters in the juices from which the liquors are being distilled.

(9) It is probable that the chips of Indian *Quassia* wood (*Picrasma Quassia*), *Chiretta* and other bitter narcotic plants (*Gentianaceæ*) are also used to flavour European beers.

(10) The astringent barks of the following trees are powdered together and mixed with *Máhuá* flowers in Chota Nagpur for fermentation and distillation purposes: *Terminalia Belerica* (*Bhaira*) or *Belleric Myrobalan*; *Terminalia*

lita Tomentosa (*Saj* or *Asán*), also a *Myrobalan*; both narcotic (?) fish poisons: *Phyllanthus Emblica Myrobalan* (*Aonlá*, *Amlá* or *Amlaki*); *Anogeissus Latifolia* (*Dhaurá*, *Dhava* or *Bakli*)—used by Southals in Cholera; *Shorea Robusta* (the *sál* tree); and the roots of the common rice, *Oryza Sativa*.

The pots are afterwards kept unwashed, as fermentation can be again set up without extra addition of this mixture. Palm and sugar-juice beverages are sometimes fermented by rice saturated in a former fermentation, the grains retaining the yeast germs (*Torula Cerevisiæ*). Oftenest the *tári* yeast itself is used, the old vessels being also kept unwashed.

(11) The Southals use *Ruellia Suffruticosa* Roxb. (the *Chaulia*) as a ferment when they wish to prepare a pleasant beverage (a beer called *Haadi*) from rice, but add to this the root of *Clerodendron Serratum*, Spreng. (the *Sarum latur* or *Barangi*), to make it intoxicating.

(12) In Upper India it is probable, says Dr. Watt, that the grains of the Darnel, *Lolium temulentum* (*Máchni*), which when ergotised becomes an acro-narcotic poison, are used to render liquor intoxicating.

(13) The bark of *Ligustrum Robustum* (Blume) or *Roxburghii*, has a reputation in South India of accelerating fermentation—put into the toddy of *Birly-már* or Indian Sago palm (*Car-yota Urens*).

(14) An ardent spirit is said to be distilled from the root of the *Cissampelos Pareira* (*Akan-adi*) in Gharwal; and the intoxicant liquor *Bar* is prepared in the Western Ghâts from the milky sap of the wild *Madár* or *Ak*, *Calotropis Gigantea*.

(15) The sacred liquor of the Parsis is fermented by a plant called *Homa* (from which it derives its name) which was pronounced at Kew to be *Ephendra Vulgaris*. Dr. Watt had the latter analysed, discovering presence of a bitter principle which might have been employed much after the manner of hops for beer in Europe or of *Accacia* bark, as for *Zú* or *Nágá* beer, in India. Dr. Dymock, however, considered the plant to be *Periploca Aphylla*. It seems probable that both plants are used by the Parsis. The question whether the latter was or was not the *Soma*, the plant employed to make the sacred liquor of the same name (and worshipped as a god) of the times of the ancient *Ayur-Veda*, is yet under discussion. Max Müller says the *Soma* was imported into India from the north by the Barbarians and "when properly squeezed yielded a juice which was allowed to ferment and, when mixed with milk and honey, produced an exhilarating and intoxicating beverage." This would appear to indicate, as Dr. Watt and Rajendra Lalla Mitra say, that the milk and honey were aided in fermenting by the addition of the *Soma* juice as a mere bitter or narcotic adjunct, and in fact was probably an early

discovery in the art of fermentation. This is confirmed from the fact that when *Soma* could not be had, the *Vedas* authorised certain substitute plants (*Ci-prés*) called *Arjuna* (perhaps a *Terminalia*), *Pâtikâs*, etc. (see Dr. Watt, vol. ii, pp. 246 *et seq.*). Some writers believe the genus *Sarcostemma* to furnish the *Homa* plant.

(16) Among other less important substances, *Arak* and other liquors are flavoured variously with the fruits of *Berberis Aristata* (*Chitra*) and like species of *Barberry* (in the Himalayas), fruits of *Star Anise* (*Illicium Verum*) and the berries of *Juniper Communis*, and numerous spices, as betel-nuts (narcotic), cloves, sandalwood, cumin seeds, black pepper, ginger, nutmegs, cardamoms, cinnamon, rose-leaves, and tubers of fragrant grasses of the genus *Andropogon* (see Watt, vol. vi., pt. iii., p. 336). *Capsicum* and chillies likewise suggest themselves.

(17) Speaking more particularly of European alcoholic liquors, the evidence before the late Royal Commission on Licensing Laws (1896) shows that in the British Islands the chief adulterants of alcoholic liquors were *Cocculus Indicus* (by brewing victuallers), grains of paradise, tobacco, chillies, coriander seed, quassia and gentian (as substitutes for hops), carbonate of soda (to neutralise acidity) sulphuric acid, varieties of turpentine (to impart smoothness), liquorice, sulphate of iron, sugar, common salt, water, and strychnine. Much of the *Cocculus Indicus*, however, is stated by Mr. R. Bannister, deputy principal, Inland Revenue Laboratory, to be re-exported (where? and for what?), or used as fish poison, or as a vermin killer. But there is a consensus of opinion that, taken all in all, spirits are rarely adulterated with any hurtful ingredient, and malt liquors seldom with anything other than water.

It is therefore argued that whatever evils arise from indulgence they are due, not to adulterants, but to the alcoholics themselves. Purity of liquors, therefore, will never establish temperance: abstinence alone can do that.

I Mission of Hospital Practice.

ABDOMINAL SURGERY AT RAIPUR.

By J. C. POYNDER, M.R.C.S., L.R.C.P.

MAJOR, I.M.S.,

Central Provinces.

Cases of Ovariectomy.

CASE No. 1.—Mal Korti, age 35, was admitted for treatment of ovarian tumour on 10th November. The woman was in fair health, and the diagnosis prevented nothing special. She was operated upon on the 13th November. The

usual incision was made about 4 inches long below the umbilicus.

The main cyst was adherent to the abdominal wall in front and was accidentally punctured, and a considerable amount of fluid escaped, some into the peritoneal cavity. The large cyst was found to be connected with the left ovary, but the ovary on the right side was also found to have several small cysts connected with it, the largest about the size of an orange. It was therefore removed. The pedicles were secured with thick sterilized silk ligatures. The abdominal wall was closed with silkworm gut sutures after the manner recommended by Treves, that is, the suture passed through all the structures of the abdominal wall. The peritoneal cavity, I should say, was first thoroughly washed out with sterilized hot water.

The patient was allowed nothing but hot water for 24 hours, with the exception of an injection of strychnine shortly after the operation as the pulse was low and the extremities cold, patient suffering a good deal from shock, and an injection of morphia subcutaneously in the evening as she was very restless and fretful. In the evening her temperature rose to 101° F., but the next morning it was normal; 100.6 was the highest temperature recorded after this on the second and third day. The stitches were removed on the 17th November, and with the exception of great weakness she was all right. She was unfortunately very fretful and greatly retarded her convalescence by refusing food, dragging at her bandages. However she was discharged on 13th January looking very well and much stouter than she was on admission.

CASE No. 2.—The main point of interest connected with this case turns on the fact that she was admitted again in July with a ventral hernia, and in very indifferent health, so that I could not operate on her until the 21st August. The operation was not as easy as I expected. The wall had given way a little on the left of the cicatrix which was part of the right wall of the sac. The peritoneum appeared to have become adherent to the skin and to have completely excluded the muscular layers of the abdominal wall. In trying to separate the cicatricial tissue I opened the peritoneum. Having done so, I separated it on both sides of the cicatrix, sewed it up with a continuous suture of fine catgut and dropped it. I then got the muscular layer, and I was surprised to find to what a distance the muscle on either side had retracted back; and to prevent anything getting between them again, I sutured the posterior layer of fascia, then the muscle, then the anterior layer of the sheath, then the skin.

The external wire sutures were removed on the 31st; the buried ligatures consisting of chronic gut and silkworm gut were left in. The superficial wound took a long time to heal, but there were no serious symptoms; the highest

temperature recorded was on the evening of the operation, 101.6. The woman, as before, greatly retarded her recovery by her fretfulness and restlessness, but she was finally discharged on 8th November 1897, and I have heard nothing of her since, so I hope that she has had no further trouble of any sort.

The question arises, whether the single suture is sufficient to form a good union or rather a union in every case which will bear the strain it is called upon to bear by the females of this country. They lift heavy weights and carry them on their heads, causing great strain on the abdominal muscles. I had another case previously in which there was very distinct tendency to ventral hernia after about a year. A patient returned to show herself twice after operation; perhaps the cicatrix has not given way any more, or perhaps the female died during the famine, as she belonged to the Bilaspur district where the mortality was very high and the distress very severe during the famine year. Her case was reported in the *Indian Medical Gazette* of August 1896. I have not seen her since her second visit, so I am not sure whether a regular hernia developed or not.

It appears to me that there is much more risk of folding different structures over each other when a single line of suture is used, and the resulting cicatrix is more liable to give way. This untoward result is, I think, less likely to happen if each separate plane is brought together by a line of sutures. The operation takes longer, however, and I must admit that in some of my other cases I have obtained very good results. Still, with equal care, the results in the two cases mentioned were not so good, and the operation described for the ventral hernia clearly showed that the peritoneum and skin were more or less fused together to the complete exclusion of the muscle; and I think, for the future, in the labouring classes, when the condition of the patient will admit it, I shall give the necessary time to suture the different layers separately.

CASE No. 3.—Milapa, age 50, admitted 31st October 1896. Ordinary cyst. Patient rather thin and not very strong. Received quinine, iron and strychnia mixture and was well fed until the 12th November, when the abdomen was prepared for operation as usual, and she was operated upon. The operation was very simple; the cyst was free from adhesions and had a fairly long thin pedicle, which was tied between ligatures and dropped into the cavity after being washed with a little sterilized water and gently dried with a clean sponge. There was no bleeding or escape of fluid into the cavity and so the peritoneum was not washed out. Highest temperature, 102.4° on the evening. I forgot to add that the wound was closed with a single line of silkworm gut sutures; it was 99°F. on the 13th and normal on the 14th. Sutures removed on the 19th. The patient was kept in

hospital until she became quite fat and healthy looking.

Nothing further has been heard about this case, so I hope she has had no trouble with the cicatrix, though the wound was only sutured with the one line of silkworm gut sutures.

CASE No. 4.—Janki, wife of a sepoy, 2nd Regt., was sent to the Main Dispensary by Capt. Moore, I.M.S., for treatment on 20th August 1896. She had a rather curious history. Two years ago she had a child; 15 days after her confinement she noticed a small swelling in her abdomen on the right side, which was moveable, and increased steadily, but not very rapidly. She had no return of her menstrual functions until March 1896, and she then only menstruated regularly once. She thinks she became pregnant immediately after this, but there was slight discharge at the end of April.

Her abdomen subsequently increased very rapidly and caused her much pain. For the last two months the tumour has been increasing rapidly, so much so, that she has some considerable dyspnoea, continual fever, and much pain in the abdomen.

On admission her state of health was very bad, the conjunctiva deeply tinged with bile. Temperature, 99°. Pulse weak. Countenance very drawn and haggard; tongue furred; bowels not open for two days and has only had snatches of sleep. For the last week, in the evening, her temperature went up to 100.4.

The abdomen was tightly distended, manifestly more on the right side than the left. The measurements were from right anterior superior spine to umbilicus, 10 inches. Ditto on the left side, 8 inches. From spine to umbilicus, right side, 1 foot 7 inches. Ditto on the left side, 1 foot 6 inches.

Fluctuation plainly felt all over the right side; no fluctuation or merely an obscure elastic feeling on the left side and distinct hard maws could be felt on the left side, so that it was clear that there was one large cyst on the right side, and she was probably pregnant. The os was rather low down and slightly patulous; there was some bulging of the right side of the vagina. A sound was not passed as she was probably pregnant. I must admit that I was not quite positive that the woman was pregnant. Mrs. George, the female hospital assistant, informed me that she had distinctly heard the fetal heart on the day after her admission, but neither Capt. Moore nor myself could hear it, and Mrs. George failed to hear it again.

The condition of the patient was about as bad as it could be, but she was kept quiet with careful light nourishing diet, small doses of stimulants and quinine, and her general condition improved so rapidly that I determined to operate on the 26th, as the distension of her abdomen was very distressing to her.

The abdomen was cleansed, and the usual incision was made; the tumour on the right was a very large multilocular cyst, some of the smaller cysts reaching up to and severely compressing the spleen. Beyond the size of the cyst there was no great difficulty about the operation. The uterus was found to contain a foetus with its head towards the os, and it was distinctly elongated and oval in shape. Though it is, I think, stated in some of the works on the subject that the cavity of the uterus is distinctly globular and the head of the foetus towards the thorax. Possibly the pains complained of were leading towards abortion, and the patulous condition of the os rather favours this idea.

Patient bore the operation fairly well, but in the evening rose to 102.8; pulse 138. Pulse was distinctly weak, and she had a dose of strychnia subcutaneously, and later on a morphia injection. This quieted her to some extent, but she did not sleep. At 7 A.M., she aborted foetus about 5 months old, after which the temperature dropped to normal. She had a douche of warm permanganate of potash lotion. The bowels moved naturally, and the patient was much more comfortable. In the afternoon a catheter was passed, as she had not passed urine for some hours, and the bladder was found to be distended slightly; some urine was drawn off. She had no subsequent difficulty. She was given:—

Ext. Ergotæ Liq.	...	...	3ss.
Liq Strychnia	...	...	mv.
Aqua	...	...	3ii

To help the uterus to contract, nutrient enema was given later in the day. Temperature was normal until the evening, when it rose to 99.

29th.—Temperature normal. Patient had passed a very good night, took some milk and was fairly comfortable. The flannel binder had got soaked with urine and was changed to-day. Patient went on very fairly. Temperature varying between normal and 99.4. Bowels were fairly regular, and she took her nourishment well, slept well, and there seemed to be every hope that she would recover. The stitches were removed on the 2nd September, 7 days after the operation; the whole of the wound had healed except a small piece about $\frac{1}{2}$ inch long at the lower part. Here the skin gaped a little, but the structures beneath appeared to have healed completely. On the 5th, there was a distinct rise of temperature in the morning, and in the middle of the day it went up to 103. This is not shown on the chart, as on the morning and evening temperatures were shown, but after this the temperature chart attached began to show the regular septicaemia type of chart—rapid rises and falls.

The wound was most carefully dressed, the uterus washed out, and everything done that could be thought of. The course of the operation wound was most carefully examined, but no local thickening or hardness could be felt which would lead one to suppose that a stitch abscess

had formed, and the only indication that something was wrong was that the fresh united tissues at the lower end of the wound distinctly began to break down and became slightly purulent. There was no offensive smell, and I believed that the woman had become infected through the uterus after the abortion. In this, I believe, I was entirely wrong, as I was allowed to make a partial *post-mortem* examination of the parts that had been operated upon, and on opening the wound, I came on a small abscess just behind the pubes, between the peritoneum and the muscular wall.

There was very slight serous effusion in the lower part of the pelvis, but neither the uterus peritoneum nor intestines showed any marked congestion such as would probably accompany septic peritonitis or metritis.

I think that the bandage becoming wetted with urine must have permitted the passage of septic germs to very lowest portion of the wound which was found not quite healed, but perfectly healthy looking when the stitches were removed. In removing the lowest stitch, I think, some of these germs had been dragged into, and infected the course of the suture, resulting in the formation of the small abscess found at the *post-mortem*; it contained about two drachms of unhealthy sanious pus rather offensive but not very markedly so.

I think the want of vitality in the lower part of the wound was an indication of the mischief underneath, and I might with propriety have opened down to see whether I could find anything. The abscess was not very clearly circumscribed and was situated on rather loose areolar tissue; consequently there was not that hardness or sense of resistance which generally clearly indicates the formation of a local abscess, and in the absence of these I felt hardly justified in reopening the wound, as it seemed quite probable that the woman had become infected through the uterus. I hope I may not have cause to do so, but in a similar case with a much unhealthy piece of wound, I shall certainly open it freely.

Another very important question also arises here—should I have been justified in producing abortion to begin with?—and I am inclined to think it would have been the wiser course. Cases of ovariectomy have been reported in which the operation has been successful, and the mother has gone on to the full term.

Hindooes are proud of a large family, and would, as a rule, I think, choose to undergo considerable risk rather than abort.

I, therefore, determined to operate and try to save the child.

On the other hand, the woman was not in the best of health, even though she made such progress during the time she was in hospital before operation.

Had she aborted first and recovered, which there is no particular reason to suppose she

would not have done, she would probably have been in better health and reduced the chance of her getting septicaemia, as the uterine discharges greatly increase the chances of producing septic contamination. The reduction in the size of the uterus would have considerably relieved the tension of her abdomen and the dyspnoea owing to pressure on the diaphragm; and the subsequent abortion, which was very likely to occur, certainly increased the general shock and depression after the operation; though it did appear to have any immediate detrimental effect, it must have added to the strain on the system.

The time of operation after abortion is in the hands of the operator, but the time the uterus will take to get rid of its contents is not under control, and probably will take place, as this one did, not long after the operation.

Taking all these facts into consideration, I think I should feel inclined to produce abortion in a similar case.

It may appear very easy in theory to diagnose pregnancy in a case like this, but I may say quite certainly that it isn't. I know of one or two cases in which mistakes have been made by some of the highest authorities, and I have myself seen an ovarian tumour with secondary cysts inside it, tightly distended, which gave an exceedingly good illustration of what a child's head feels like in utero, when felt through the abdominal wall. Captain Moore, I.M.S., was kind enough to give me his valuable assistance at the time of the operation, and subsequently saw the patient frequently and with some difficulty obtained the permission of the patient's husband to enable us to examine the wound, by which I was able to find out where the mischief had probably originated—a most valuable piece of information for future guidance.

Assistant-Surgeon Gopal Chunder Ghose gave chloroform and took the greatest interest in the case during the long and anxious time which elapsed between the operation and death of the patient when we were trying all we could think of to pull our patient through. He was ably assisted by Hospital Assistant Mudhu Soudan Dass and Mrs. George, the Female Hospital Assistant in charge of our Dufferin Ward.

Attached to this case is a temperature chart.

CASE No. 5.—Parbati Soubrarin, an elderly woman, very thin and haggard, age about 45, was admitted on 9th October 1896.

She was kept under treatment to improve her general health until the 20th. Temperature went up to 102·8, 4 hours after operation, but dropped to normal by 12 midnight and continued between normal and 99·4, until the 23rd, when she complained of a feeling of fulness and desire to evacuate; she was accordingly given a mild saline aperient. This was followed by three rather free stools, and at 1 P.M., on the 24th, her tem-

perature was 101·4; in the evening, it was 104, when she had a cold sponging, and it fell to 100, after which she slept well. There was a good deal of sanguineous discharge from the vagina, requiring frequent syringing with Condy's fluid to keep her clean. On the 28th, as her temperature had again gone up to 104, she had a subcutaneous injection of 5 m. creasote in 5 m. olive oil. This was followed in two hours by most copious perspiration, and a drop in the temperature to 98. It produced, however, in addition, most dangerous symptoms of collapse, the pulse became weak and thready, and the patient was barely conscious. However, she pulled round after an ether injection, and the temperature began to go up again. It was kept fairly in check by sponging, and from this time she began to improve, and the temperature became normal on the 26th, and she was discharged after a month on the 24th November, quite stout and hardly recognizable as the thin worn-out creature who had been admitted.

The main point of interest about her case was whether the purgative had caused the mischief; it seemed very much like it; and it is well to postpone a purgative until later; if required, an enema only should be given.

Another point of interest is the powerful effect produced by the subcutaneous injection of creasote. It appears to be a very valuable remedy, but requires to be used with great care owing to the depression which may follow its use.

CASE No. 6.—Remootoo Kaotin, age about 45, admitted on 2nd August 1897 with ovarian tumour. Health indifferent. Was put on quinine, tonics and extra food until the 18th.

18th, *Operation*.—Nothing abnormal; a very large cyst was removed in the usual manner. In this case the peritoneum was washed out with hot sterilized water and sewed up with a fine continuous catgut suture, the muscles and fascia with silkworm gut and the skin with wire; highest temperature recorded 100° on the evening of operation, the next morning 99°, and after that it was normal. A small twisted wire drain was put into the wound at the operation. This was removed on the 22nd.

The external stitches were removed on the 31st. The skin had not united in places, but was adherent to the underlying tissue.

This occurred through making the stitches too tight. I think it is of the greatest importance that the edges of the skin are approximated accurately without being tilted either way, it is very difficult to accomplish this always. To my mind the wound looks very nicely adjusted, and it is not until the stitches are removed that it is found a little tilt was given slightly, rolling the edges away at one or other edge. A little careful attention to this point repays the time spent on it, as the skin heals much more quickly.

(To be continued.)

[illegible]

THE
Indian Medical Gazette.
 JUNE, 1899.

SICKNESS AND MORTALITY IN INDIAN
 JAILS.

THERE is perhaps no subject in the whole range of tropical pathology which in India has given rise to so much discussion and difference of opinion as the exact nature of that form of anæmia and dropsy which at times has affected prisoners in jails and coolies on tea garden estates. We are all familiar with the question as it affects Assam, and now we purpose to review a report just issued by Captain C. J. Fearnside, I.M.S., the Superintendent of Rajahmundry Central Jail, on the causes of the periodical outbreaks of sickness which have occurred in that Jail.

Owing to the unhealthiness of this Jail in 1896-97, the Surgeon-General of Madras and the Sanitary Commissioner visited it in 1897 and reported to Government that in their opinion the disease to which the high mortality was and had been due was beri-beri, and moreover it was suggested that the introduction of this infection was owing to the transfer of a batch of Burman convicts to Rajahmundry in that year. The symptoms upon which the Sanitary Commissioner appears to have based this opinion were the occurrence of anæmia and dropsy, complaints of numbness, and in a few cases heart symptoms. The fact that so long ago as 1835 Malcomson had described beri-beri as endemic in the North Circars was also probably not without influence in the formation of this opinion, though, if the disease was believed to be endemic, it was hardly necessary to raise the question of its introduction by Burmese convicts in 1897. Beri-beri is believed by many, as our columns within the past year have shown, to be endemic in several parts of the Madras Presidency. In the present report Dr. Fearnside boldly challenges the official opinion and submits a mass of evidence which goes to prove that it is not beri-beri infection but malaria to which must be attributed the mortality and high sick-rate of this Jail. In addition to the malaria Dr. Fearnside points out that the *anchylostoma* is very frequently present among the prisoners (in 75 per cent. of post-mortem examinations it has

been found) and it must be regarded as contributing to the cachexia in persons saturated with malaria. He also shows that for many years Rajahmundry has been notorious for its malaria and its sanitary condition till recently left much to be desired. A glance at the chief diseases prevalent, *viz.*, anæmia "dropsy," rheumatism, jaundice and ague shows also that malaria was ever present. All of these may be symptoms of malarial cachexia, and it is owing usually to the predominance of a special symptom or to carelessness in diagnosis that these disease-names or rather symptoms are entered in the returns instead of the well-understood term "malarial cachexia," which, however, the college of physicians have in their unwisdom banished from the nomenclature of disease.

The symptoms and pathological lesions of the fatal cases, as detailed in Table VI of this report, are entirely explicable on the malarial theory and do not support the view that the disease was beri-beri. The only symptoms recorded in these cases, which are in any way special to beri-beri, are "numbness" and vague cardiac symptoms in a few cases. Nothing is more difficult to interpret in ignorant patients than complaints of symptoms of a subjective nature, and we agree with Dr. Fearnside that the symptoms interpreted as "numbness" were often rather a feeling of discomfort due to the swelling of the feet and legs. This view is rendered the more probable by the fact that "numbness" is also recorded in other cases in which there could be no suspicion of a beri-beri neuritis. The fact that in 22 out of 34 deaths from supposed beri-beri the heart is mentioned as normal or passed over as not needing notice is strongly opposed to the beri-beri theory, as enlargement of the heart is so characteristic of this disease in all its forms. Moreover the total absence of paraplegia, loss of reflexes, &c., in the recorded cases are more than strange if the disease was beri-beri. On the other hand, the enlargement of the spleen, the albuminuria and cirrhosis of the liver are strongly in favour of Dr. Fearnside's view that the disease was malarial cachexia. What, however, seems to us to be the most important point in favour of Dr. Fearnside's opinion is that exactly similar cases have been at times very common in many Bengal Jails, and though the question of beri-beri was once mooted by Dr. D. Basu at Mymensingh, yet it is pretty generally agreed that the disease

beri-beri is unknown in Bengal except among Chinese carpenters in Calcutta. Those who remember that unhealthy year 1894 in Bengal will be well acquainted with numerous cases exactly answering to those described by Dr. Fearnside, but in Bengal these were 'returned' as either anæmia or malarial cachexia. We know of such cases in Mymensingh Jail which Dr. J. T. Calvert had no hesitation in regarding as malarial. We know of numerous similar cases which occurred in Dacca Central Jail and which were carefully observed by Dr. Russell and Dr. R. Bird, yet they never dreamt of diagnosing them as beri-beri.

Of course it may be said that as Dr. Fearnside has only recently taken charge of the Rajahmundry Jail, he cannot have any authoritative opinion on the nature of the diseases which there existed before his time, but he has shown by an examination of the records that the facts recorded do not fit in with the beri-beri theory, and he has very strong evidence that the cases were similar to the ones he actually had charge of which he shows were undoubtedly malarial. He has made careful examinations of the blood in numerous cases where the symptoms previously were interpreted as beri-beri, and in all he found the malarial parasite in one or more of its phases. In 100 cases the following is a classification according to the parasite found:—

BENIGN	Tertian	..	..	65
	Quartan	...	...	2
MALIGNANT	Quotidian (pigmented)	...	...	30
	Quotidian (non-pigmented)	...	...	...
	Tertian	...	..	2
	Irregular malignant	...	...	1

100

In these 100 cases the following came under observation:—

"Brassy bodies" in	...	...	13 cases.
Crescents and Ovals	...	...	26 "
Both crescents and brassy bodies	...	...	5 "
Hyaline plasmodia	...	...	70 "
Free spores	...	...	25 "
Free pigment	...	..	11 "
Pigmented spheres	...	...	33 "
Free flagella and flagellates	...	...	37 "
Pigmented leucocytes	..	...	27 "
Sporulating forms	..	...	10 "

Dr. Fearnside believes that the varying intensity of the malarial fevers depends upon the proportion of cases in which the malignant forms of the hæmatozoon are present. He finds that it is a dim coloured mosquito which is

chiefly concerned in the spread of the disease in Rajahmundry. We cannot find more space to deal with this very interesting report. In our opinion Dr. Fearnside has in a very able way proved his case, and shown that the former theory of a beri-beri infection is wholly untenable. We commend this report to the attention of our readers, as it is the first in which the ravages of malaria in a person have been studied according to the methods of modern science.

MOSQUITOES AND MALARIA.

AN interesting summary of this question is given by Surgeon-General Harvey in his latest annual report as Sanitary Commissioner with the Government of India.

Until recently, our conception of the theory of the propagation of malarial fevers by the parasite discovered by Laveran was limited by the fact that no one had been able to discover the organism in external nature; and the difficulties surrounding the subject were so great that this discovery seemed to be almost hopeless. In 1894, however, Dr. Patrick Manson stated in a definite way a theory that the parasites are capable of transference to mosquitoes feeding on the blood of infected persons.* The belief that malarial fever was in some way connected with mosquitoes was not a new one; indeed, it appears that a connection between insects and malarial fever was suspected before the beginning of the Christian era.† In modern times a theory of the conveyance of malarial infection by mosquitoes existed in the United States, but seems to have remained unknown in Europe; and even the suggestion made more than once by Laveran himself,‡ that possibly mosquitoes played a part in the propagation of paludism as they do in filariasis did not attract attention. It was not until the publication of Dr. Manson's paper on the subject that the minds of British observers, at any rate, were turned seriously to the mosquito as a possible intermediate host.

* *British Medical Journal*, 1894, Volume II, page 1306.

† See paper by Dr. George H. F. Nuttall, in the *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten*, 14th February 1899, and following numbers.

‡ Du Paludisme et de son Hématozoaire, Paris, 1891, page 147, and again on page 60 of the Volume on Paludisme in M. Léauté's *Encyclopédie Scientifique des Aide-Mémoire*, Paris, 1892.

In 1895 Surgeon-Major Ronald Ross, of the Indian Medical Service, began the experimental study of the subject in India; but for more than two years, during which he fed vast numbers of mosquitoes on persons suffering from malarial fever, he failed to obtain any conclusive evidence in favour of Manson's hypothesis.

Meanwhile, however, belief in the connection between malaria and mosquitoes was gaining ground, and it is of interest to quote the remarks of Dr. Robert Koch, who studied the subject in German East Africa:—

"With regard to the method of the origin of tropical malaria, I have arrived at no certain conclusions. One cannot as yet go beyond conjectures. But the number of possibilities which may be discussed in this regard are now, with increasing knowledge of the actual nature of malaria, being continuously limited, and there now remain, so far as tropical malaria is concerned, only two agents for the conveyance of infection which need be seriously considered. These are drinking-water and mosquitoes. The more I study this disease, the more I incline to the opinion that the latter is the chief, and probably the only factor. Wherever one turns, one finds a local and a seasonal relationship, between the existence of tropical malaria and the presence of mosquitoes. On the coast there are a few places which are regarded as free from malaria; one of them is the island of Chole, which lies at the southern extremity of the large island of Mafia. I have visited this island, which in former times was used as a sanitarium by the Zanzibar Arabs. It is the only place on the coast where I was able to sleep without mosquito-curtains. Among mountains, malaria stops exactly where there are no longer any mosquitoes. In the interiors of countries malaria diminishes where mosquitoes diminish. At the times of the year when mosquitoes abound malarial fevers are most frequent.

"I am most strengthened in my conviction by the analogy of malaria with Texas fever and other tropical diseases of men and animals, in which the parasites are found in the blood exclusively. In all these diseases the infection is carried by blood-sucking insects, not indeed that the insect carries the infectious matter direct from the blood of one animal to that of another, but the parasite goes through further developmental stages in the insect, passes into the eggs and into the young insects, and is by them car-

ried to the proper host. In this or some similar way, I think the mosquito plays its part in regard to tropical malaria."*

In August 1897, Surgeon-Major Ross' perseverance was at last rewarded. He observed in the stomach of a particular kind of mosquito, fed on the blood of a person suffering from malarial fever, certain pigmented cells. From the resemblance of the pigment in those cells to that found in the organisms associated with malaria, he was led to hope that he had found an extra-corporeal development of the latter.

In February 1898, Surgeon-Major Ross† was placed on special duty under the Sanitary Commissioner with the Government of India for the investigation of the malarial problem and *kala-azar*, and was given the use of the laboratory of the Special Assistant to the Sanitary Commissioner in Calcutta.

Surgeon-Major Ross at once resumed the study of the pigmented cells. After some experiments attended by negative results, he found that the pigmented cells were almost always present in a particular variety of mosquito,—a mosquito capable of carrying *filaria nocturna*,—after it had been fed on sparrows infected with *proteosoma* Labbé, which is a parasite nearly akin to the parasites associated with malarial fever in man. After examining a very large number of such mosquitoes fed on infected birds, controlling his experiments by the examination of insects of the same variety fed on healthy birds, Surgeon-Major Ross satisfied himself that the pigmented cells are a developmental stage in the mosquito of the blood parasites of the infected birds. He was, moreover, able to trace the gradual growth and development of the cells in the insects.

Shortly after the mosquito has been fed on the infected blood, the cells begin to appear, according to Ross, as small oval bodies containing pigment attached to the outer wall of the insect's stomach. These bodies rapidly increase in size, until after six days they reach a maximum of about 60 micromillimetres in diameter, and are protruded freely into the coelum, or blood cavity, of the mosquito. Major Ross considers these bodies to be coccidia, and calls them *proteosoma coccidia*.

* *Die Malaria in Deutsch-Ostafrika*. Arbeiten a. d. Kaiserlichen Gesundheitsamt. Volume XIV, page 299.

† Major Ross' Discovery.

The next object was to discover the sporulation of the *proteosoma* coccidia; and Surgeon-Major Ross soon satisfied himself that there are two kinds of reproductive elements, (a) delicate thread-like bodies, and (b) large black spores.

And now the enquiry became of particular interest, for there was reason to suppose that the mode of infection of birds with *proteosoma* certainly, and the mystery of the infection of man with the organism of malaria probably, would be explained by the results of the next step in the investigation.

The results attained were somewhat unexpected, as Ross himself states. He discovered that the thread-like bodies have the faculty of entering and remaining in the large grape-like cells of the salivary gland of the mosquito. This gland lies near the head of the insect, and a duct runs from it to the extremity of the tongue or epipharynx, one of the stylets of the proboscis which is used by the mosquito to pierce the skin of its victim. Ross believes that the secretion of this gland is poured into the wound, its function being to prevent the contraction of the torn capillary vessels, and its effect the familiar irritation of the mosquito bite. His theory of infection was that the thread-like reproductive elements of the *proteosoma* coccidia, having accumulated in the gland, were carried out by its secretion into the blood of any creature on which the mosquito might feed. Once in the blood, *proteosoma* infection would be set up, provided the victim of the mosquito was a susceptible bird.

So far, this theory was supported only by the life-history of the *proteosoma*, and Ross next endeavoured to confirm his speculations by the direct infection of healthy birds. He fed a number of mosquitoes on birds infected with *proteosoma*, and, after keeping them for a week in order to allow time for the production by the *proteosoma* coccidia of the thread-like bodies, he fed the mosquitoes on birds which he had previously ascertained were free from *proteosoma* infection. The result was decisive. After a definite incubation period of from five to eight days, 80 per cent. of these birds became infected with what he describes as immense numbers of *proteosoma*. Most of the birds died and showed the characteristic black pigmentation in the liver and spleen. Major Ross states that *proteosoma* infection is found in only about 13·5 per cent. of the free sparrows which he examined in Calcutta,

and then the parasites are far inferior in number to those in his experimental cases. He, therefore, considers that the fact that *proteosoma* infection is carried from a diseased to a healthy bird by mosquitoes has been placed by him beyond question.

Major Ross has not yet succeeded in extending these latter observations to human malaria, nor has he yet ascertained the function of the black spores; and work in both directions must be completed before the problem of the propagation of malarial fever can be said to be solved. He fears, moreover, that the task of finding the appropriate definite hosts for each of the different gymnosporidia will prove to be a hard one. Major Ross is, however, inclined to anticipate that the direct infection of the malarial germs through the suctorial apparatus of the mosquito will be found to be the only method of infection. If this is so, the prevention of malaria will depend upon the prevention of mosquito-bites. This may not be so difficult as is supposed, because, at any rate as regards several species, mosquitoes have a limited area of propagation, in barrels of water, puddles, and ditches, where small fish, which devour them greedily, cannot live.

Before the important subject of limiting the propagation of mosquitoes is considered, the species and habits of the insects which act as hosts to the parasites must be learned, and this work is now obtaining serious attention in many parts of the world. In the meantime it may be stated that there is good ground for the belief that the commoner species of mosquito cannot convey the organism of human malaria.

Major Ross had not to wait long for the confirmation* of his work. Dr. C. W. Daniels, of the British Guiana Medical Service, as a member of the Malaria Commission, was sent out to India that he might make himself acquainted with Major Ross' researches. In his report, about to be submitted, by the direction of the Colonial Office, to the Secretary of the Malaria Investigation Committee of the Royal Society, Dr. Daniels confirms Major Ross' discovery of the propagation of the *proteosoma* by mosquitoes.

In Italy, Professor Grassi and Drs. Bignami and Bastianelli, after receiving reports and specimens from Major Ross, have published†

* Confirmation and Application of Major Ross' Discovery.

† Rendiconti della R. Accad. dei Lincei—*Ulteriori ricerche sul ciclo dei parassiti malarici umani nel corpo del zanzara*. Rome, December 22nd, 1898.

their success in following the development of two of the parasites of human malaria in a species of mosquito (*Anopheles claviger*).

LONDON LETTER.

BOOM IN TROPICAL MEDICINE.

THE boom in tropical medicine waxes louder. The Edinburgh and Aberdeen Universities are establishing lectureships on the diseases of tropical climates. The Liverpool School has been started on promising lines, and the London School is being diligently organised. The Staff of the Dreadnought Hospital at Greenwich have resigned their appointments, and considering the scurvy manner in which they have been treated by the Committee of the Seamen's Hospital Society, this is not surprising. Meantime, the branch at the Albert Docks is being enlarged for the purpose of accommodating an increased number of patients to serve as clinical material for the new school. Funds are forthcoming in sufficiency to defray the cost of these enlargements, and it is anticipated that the amount originally estimated as necessary to launch the institution in an efficient state will be realized. A banquet is to be held on the 10th of May for the purpose of inaugurating the school; the Colonial Secretary is to preside, and many distinguished men—among them the Marquess of Lorne, Lord Lister, Lord Rothschild, Lord Strathcona, the Lord Mayor of London and Sir Donald Currie—have consented to attend. The function will, therefore, be an impressive one, and will, as is usual on such occasions, be distinguished by an outpouring of eloquence, and it is to be hoped, a loosening of purse strings. Dr. Patrick Manson has worked the scheme with energy and success. A great number of tropical practitioners have testified in the medical journals regarding the benefit they have gained from attending the practice of the Albert Dock Hospital in its embryo state, and when the school has been put into full working order, the quantity and quality of the instruction derivable from it will be greatly enhanced. The *Journal of Tropical Medicine* has reached its eighth number, and gives evidence of strong vitality. It is further proposed to start a society for the discussion of tropical diseases in London. With all these facilities for gaining information regarding maladies peculiar to the tropics, and the peculiarities

of ordinary diseases in tropical climates, it is a cause of wonder how men who practised in tropical countries in times past gained the knowledge necessary to enable them to do so.

RIDING THE TROPICAL HOBBY TOO HARD.

A correspondent of the *Lancet*, writing anonymously from South Africa, has the hardihood to affirm that all this special education is not requisite, and that an intelligent and attentive student can obtain, during his curriculum of study in any medical school, sufficient training in the principles and details of medical science to enable him, with the aid of text-books, to recognise tropical diseases readily when he encounters them and to treat them successfully. He asserts that he himself found no difficulty in so doing. There is some truth in this view, and it may be that the tropical hobby is being ridden rather hard. But whatever may be said as to the possibility of obtaining a theoretical acquaintance with tropical diseases without seeing them, there can be no denying that a practical familiarity derived from observation of cases and study of objects is infinitely superior to more or less hazy notions derived from books and lectures; and the application of general doctrines to particular and hitherto unseen phenomena is apt to result in misapprehension. Moreover, the comparison with times past is unsound, because investigation on the spot has revealed circumstances and conditions governing the causation, pathology, course and treatment of tropical diseases which could not possibly have been discovered otherwise, and this accession of knowledge has come to constitute a large body of special science which must be mastered, if any advance is to be made on the same line, that is, by observation and research *in loco*.

TROPICAL DISEASE OUTSIDE THE TROPICS.

And this special study throws light not only upon tropical disease in the tropics, but also on tropical disease occurring outside of the tropics. For example, the knowledge which had been gained in the tropics regarding beri-beri must have been very helpful to the medical superintendents of the lunatic asylums in Europe and America, in which this disease has made its appearance.

DYSENTERY IN ENGLISH ASYLUMS AND JAILS.

Similarly, the occurrence of outbreaks of dysentery in the same class of institutions may well

be studied in comparison with the prevalence and fatality of this disease in Indian prisons. The most severe epidemic of dysentery which I ever witnessed was in the Durham County Asylum while serving there as Assistant Medical Superintendent during the years 1861-64. The cases were mostly of the diphtheritic or croupo-fibrinous type, very severe and fatal. The outbreak occurred about the same time as that which happened in the Cumberland and Westmoreland County Asylum, the incidents of which were so fully and ably described by Dr. Clouston in the *Lancet* at the time. In both instances the disease was undoubtedly due to faulty sewage disposal, especially to the irrigation of fields with the putrid contents of sewage tanks. No doubt the enfeebled systems of the patient rendered them more apt to succumb to infection and perhaps crowding and other sanitary defects arising from the accumulation of insane persons contributed to the result. With a vivid recollection of these events I perused with very great interest the excellent leader in your February issue on "Dysentery in English Asylums and Indian Jails." There was a time when dysentery was a scourge of English prisons. Dr. Baly's account of his experiences in the Millbank prison is historical. Improved sanitation has banished the disease as well as typhoid fever from English prisons, and there can be no question or doubt that dysentery is capable of being banished from English asylums and Indian prisons by similar means. Dr. Gemmel has done well in bringing this subject into prominent notice; and although the conditions which originated and spread dysentery in Indian prisons are more difficult to deal with than in similar institutions in temperate climates. Efforts to abate the scourge must be unremitting.

THE CAUSE OF CANCER.

The April number of the *Practitioner* is devoted exclusively to the subject of cancer, and contains information of the most interesting and important character regarding the prevalence, distribution, localization, grouping, possible infectiousness and microbic origin and treatment operative and otherwise of that justly dreaded malady. The articles are contributed by men who have made these special phases of the subject a special study, and within a moderate

compass one may obtain the most recent and exact information on each of the topics which I have specified. Mr. Malcolm Morris did a very good work in devoting a special issue of his journal to tuberculosis, and thus contributing materially to initiate and promote the great movement which has arisen, having for its object the prevention and, if possible, suppression of tuberculous infection. The circumstances, as regards our knowledge of cancer causation, are not such as to justify a similar crusade; but good will undoubtedly come of directing special attention to points connected therewith, which are eminently and urgently deserving of attention and further investigation.

K. McL.

14th April, 1899.

Current Topics.

FOOT SORES IN SOLDIERS.

THIS troublesome cause of crippling is one of the serious difficulties which the military medical officer has to combat on active service. The unhealthiness of such sores is believed by Colonel L. Notter, R.A.M.C., Netley, to be connected with micro-organisms, the warmth and moisture of the foot making the soldier's boot an almost perfect incubator, while the organic substances contained in the perspiration provide a constant supply of nutrient medium for the development of bacteria. Professor Notter in his article on the subject in the Army Medical Department Report for 1897 states "the micro-organisms connected with perspiring and offensive feet have received much attention. These, there are reasons for believing, are many and various; the skin, the stockings, and the boots themselves become so highly charged with micro-organisms that the smallest abrasion soon becomes a sore." He then alludes to the various antiseptics employed for the purpose of destroying this microbus life, which often leads up to the production of sore feet. The best authorities advocate the use of simple formalin, which Gerdeck has used, and says that when it has been applied as a solution to the feet a few times, they do not sweat again for two or three weeks. A few drops of the fluid are also dropped into the boots to disinfect them. Some particulars of an analogous class of sores will be found in another column. The foot-gear of the soldier in India is discussed by Major B. M. Skinner, R.A.M.C., in the April number of the Indian United Service

Institution's Journal, in an interesting article on marching. Major Skinner considers the army boot is a very good boot in itself and that the alternative of *chaplis* may be disregarded so far as British troops are concerned.

PLAGUE PROCESSIONS.

ALTHOUGH the plague epidemic in Calcutta is declining, every night, for some weeks past, might be seen both Mohamedan and Hindu processions parading the streets of the Native portion of the town with the object of propitiating the deity so as to avert the pestilence. These processions are composed of some 30 to 40 persons, men and boys—in the Hindu trains occasionally a woman or two. They slowly wend their way through all the main thoroughfares surrounding certain large bustees, singing, or intoning certain prayers which are supposed to be efficacious in driving away the plague. The Mohamedans carry banners and flags, the former with talismanic Arabic inscriptions from the Koran worked on them, and numerous lights from handsome shades with candles burning in them to lanterns of all descriptions. No musical instruments accompany their chant. The Hindu trains, composed solely of Calcutta bred and born natives (for the most part Bengalis), move with ceremonious solemnity, singing the while to the accompaniment of tomtoms and like instruments. They carry no lights, only red pennons, and many of them proceed to the temple of the bloody goddess of destruction Kali, at Kalighat, and replenish its coffers with their offerings. The processions are most orderly, partaking more of the character of a funeral march than anything else. The chanting of the Mohamedans is by no means unpleasant, their intonation remaining on the ear long after the procession has passed. The Hindus call these processions *Sankirtan* or religious singing.

The object of these demonstrations is thus expressed by a Bengali correspondent in the pages of a Calcutta paper:—

"Last year the Mighty Demon's shadow fell upon the City of Palaces, and its inhabitants were firmly convinced that the name of merciful Hari would only be embraced in sincerity; and so they began to invoke and extol the name of the Almighty Hari in every creek and corner of the city. Their prayers were at once peremptorily answered, the great shadow of plague melted away in distant horizon, and the restrictions laid on them by the Government were quietly removed.

"Again the unblushing face of the disastrous disease appeared in the Capital; and again the people under the present panic considered it necessary for the safety of their lives to chant and praise in chorus the holy name of Hari, the destroyer of all demons. As none but immortal Power can baffle the power of mortality, so the immortal name of all pervading Hari is scattered throughout the streets and lanes of Calcutta, day and night, in expectation of again extirpating out the evil precursor from the precincts of this city.

"An imposition of license or pass on such parties who volunteered themselves to devote for such sacred causes of serene effect, is a thing altogether incomprehensible to every person who possesses a least spark of humanity.

"And I hope our worthy redeemer the Lieutenant-Governor will lend his gracious ears in this prayer and as a benign ruler will exempt the poor *Sankirtan* parties from such sort of vexatious exactions."

Though the avowed object of this worship is to propitiate the Deity so as to avert the ravages of plague, those, however, writes the *Indian Witness*, who see behind the scenes and read between the lines, think that these processions are designed quite as much to revive the dying embers of Hinduism as to secure the extirpation of plague. An unusually large *Sankirtan* procession paraded the streets in the Northern section of the town. Two gaily decorated arches had been erected on the way of the procession. Chinese lanterns were hung on the wayside. The thing lasted from five o'clock in the afternoon till two o'clock in the morning. The procession was received royally by the Marwari residents of Sutapatti. Rose water was sprinkled by gallons upon gallons. The whole route was illuminated, and occasionally there were fireworks besides. It was like a Roman saturnalia. It was fun and frolic, a huge *tamasha*, but scarcely any religion. Certainly, the affair lacked all religious concentration and solemnity. We are told that the expense on the occasion was large, and a fund was raised by subscription by the residents of Sutapatti. We are further told that the expenses of the different *Sankirtan* parties in Calcutta so far must have amounted to an enormous sum. How much better might the money have been spent in the performance of the *Homa* ceremony, in the celebration of the *Yagnas*, in the recitation of Vedic *Mantras*, in feeding the hungry, in clothing the naked, in promoting sanitation in the quarters occupied by the poor of Calcutta. We heartily endorse the latter part of this argument, especially the cleansing of the native town.

BENGALI JOURNAL OF HEALTH AND SANITATION.

WE have much pleasure in drawing the attention of our readers in Bengal to that useful monthly journal in Bengali, *The Swasthya*, started by Dr. D. D. Gupta about a year ago with the view of diffusing a knowledge of the laws of health and sanitation amongst his countrymen. Dr. D. D. Gupta has issued this journal in the vernacular and at the nominal cost of Rs. 2, including postage. It contains notes and articles on the health aspect of native habits, the sanitary measures necessary to stop the epidemic diseases of the land, the management of children in health and diseases and such problems as how to promote longevity, prevent premature decay

and other allied subjects in which popular education is still defective and about which there is still a great deal of ignorance requiring removal.

The practical character of the contents may be seen from the following list for Part II :—

Diseases due to impure water. Dirty house and disease. Habits. Our food. The quantity of food we ought to take. Vegetable food. An incident from life illustrating spread of contagion. Intermittent fevers. Plague in Calcutta. How to preserve purity of water in wells. Hot water drinking as a remedy. Diseases of children and mothers' duties. Sources of water. Diet in acute fevers. Evil effects of tobacco-smoking. Milk—typical food and typical diet. Properties of some indigenous drugs. Rice and barley. Vegetable and animal diet. Sick dietary. Plague treatment. Inoculation as a preventive of plague. Legislative measures to prevent plague. Plague news. Few important facts regarding plague. Lessons from plague. Calcutta—before and after plague. Pasteur Institute in France. Physical exercise of boys. Management of infant at breast. Malaria. Prevention of malaria. Clothing. Dwelling-house. National Association for prevention of consumption in England. Miscellaneous. Quantity of milk an infant to take. Sick child. Breathing. Results of 60 years' sanitation in England. Contagious disease and our national custom. News. New-born infant. Dust in towns. Evil effects of drinking. Sandow and physical development. The Hindu widow.

This journal undoubtedly supplies a distinct want. Civil Surgeons and Assistant Surgeons throughout the Bengali-speaking districts of the Province would find their labours for sanitary reform much more likely to prove fruitful were they to assist in the diffusion of such a journal as this amongst the people. We trust that this praiseworthy effort of Dr. D. D. Gupta may meet with the success which it so well deserves.

COATES' PRIZE FOR MEDICAL RESEARCH.

THIS prize for "Original Research in Medicine," which was instituted in memory of Dr. Coates, late Principal of the Medical College, Calcutta, is now open for competition. The rules for its award are as follows:—

1. The prize shall be awarded to the best writer of a thesis on Indigenous Drugs to be notified each year by the President of the Faculty of Medicine in the *Calcutta Gazette*.

2. The thesis must be written in the English language and it must be forwarded to the President of the Faculty for the time being, not later than the 30th November each year.

3. The President of the Faculty of Medicine may examine the thesis himself or depute it to some expert member of the Faculty, whose decision shall be final.

4. The writer of the thesis must be a Graduate in Medicine of the Calcutta University, who has been engaged in the practice of his profession for at least five years, so that his experience may be relied on by the Profession at large.

NEW HOSPITAL FOR HAZARIBAGH.

THIS new Charitable Hospital was opened on the 8th ultimo by the Commissioner of the Division, it forms one of the most striking buildings in the town, and is composed of three main blocks with terracotta tiled roofs, resembling a pretty Swiss chalet. There are also houses for the doctor Babu, compounder, servants, kitchens, pauper and female wards, &c., and the whole ground occupied amounts to several acres. The accommodation is for 32 in-patients, and the out-patient department is very complete. The land was given by Government. The money for the buildings (Rs. 14,000) was raised by the sale of the old hospital and site by subscriptions, and by the proceeds of various entertainments got up in aid of the fund. Then the concerts got up by Dr. Maynard and the other entertainments had brought in several hundreds, and the furnishing had been further provided for by smaller subscriptions since collected by Babu Girindra Nath Gupta. Sir John Woodburn, when inspecting the hospital at his visit to Hazaribagh in November last, very kindly promised the equivalent of what could be raised locally after his visit. This he was glad to be informed, was about Rs. 3,500, so there appeared to be every chance of there being a balance in hand. With this Mr. Forbes said he hoped to see the ground at the lower end of the site raised with a view to having a new Dufferin Hospital built there at some future date, as the advantages of having this hospital near the main dispensary were many and obvious.

THE result of the working of the Bertillon system of identifying criminals by anthropometry in the Punjab during the past year shows that 19 per cent. of criminals, whose antecedents were unknown, were identified as habitual offenders with previous convictions, varying from one to twenty in number. A large percentage of those whose identity was not established were reputed to be residents of the Native States in which the system is not in force.

CATTLE disease has been very prevalent in parts of the Thayetmyo, Henzada, and Maubin districts during the present dry season. The losses annually sustained by agriculturists in this province from cattle disease, largely preventable when timely measures and segregation are adopted, must amount to enormous sums. While we spend yearly increasing amounts on education, it would be as well, remarks the *Rangoon Gazette*, that some elementary instruction on the points of protecting their cattle should be available at every school and every police thana in Burma.

"In the Tirah campaign," said Lord Lansdowne, at the banquet in aid of the London School

of Tropical Medicine, "there were 600 deaths from, and 11,000 cases of, disease, against, one thousand wounded and one hundred killed in action."

THE new hospital ship built for the Ceylon Government by the New Harbour Dock Company of Singapore, arrived at Colombo last week, conveyed by the Holt Line Steamer *Tele-machus*. The work of fitting up the necessary machinery and appurtenances will shortly be taken in hand.

SURGEON-GENERAL HARVEY, Director-General of the Indian Medical Service, has taken three months' leave to Europe, during which he will take the opportunity of visiting the Pasteur Institute, Paris, and also Amsterdam, in connection with sewage questions.

Reviews.

Text-book of the Diseases of Children.—

By American Teachers. Edited by L. STURR, M.D., assisted by F. S. WESTCOTT, M.D. 2nd Edition, revised. Philadelphia: W. B. SAUNDERS, 1899. Imperial 8vo. Pp. 1250. Price \$7.

IN this handsome volume we have quite an encyclopædia of the diseases of children, the conjoint work of sixty-five specialists in the various departments, and the result is one of the best practical text-books on this subject in the English language. It comprises not only the wide range of infantile ailments and their medical treatment, the diet, hygiene and general management of children, but also chapters on the more important surgical subjects, orthopædics, diseases of the skin, eye, ear and throat. The operations, such as tracheotomy, intubation of the larynx, abscission of uvula, trussing in deformities, &c., are fully described and profusely illustrated where necessary. The directions for treatment generally are thoroughly sound and full of useful detail. In connection with rickets the frequent occurrence of *laryngismus stridulus* is noted, and that it is probably due to auto-intoxication through intestinal disorder, and not to brain-pressure as it is common in the rachitic who have no cranial or chest deformity. As regards artificial food in this condition the contributor of the monograph, Dr. Smith, states: "I have observed the occurrence of rachitis in children whose diet consisted chiefly of certain proprietary foods; and in looking over the composition of these foods, one of the chief causes of this result appears to be the small amount of fat which they contain. Thus, according to Professor Leeds' analyses, Mellin's Food contains only 0.15 part in 144.74 and Nestle's Food only 1.91 parts in 139.69, whereas human milk contains 3.90 per cent of fat,

and cow's milk 3.66 per cent." No mention seems to be made of the great value of fresh meat juice in such cases as advocated by Dr. Gee and others. In the treatment of diphtheria, anti-toxin is considered to be almost a specific remedy for the *laryngeal* form of this affection, where the chief danger is from asphyxia and the toxin of the Klebs-Löffler bacillus; whereas, on the other hand, in the *naso-pharyngeal* form which is associated with streptococci, it appears to be less useful, as there is a greater tendency to blood poisoning, and both the germ and its toxin have to be fought. Altogether the work is to be highly recommended to the general practitioner as a sound book for handy reference.

The Principles and Practice of Medicine.—

By W. OSLER, M.D., LL.D., F.R.S., &c. 3rd Edition, largely re-written. Edinburgh and London: YOUNG J. PENTLAND, 1898. Pp. 1181.

THIS new edition of this well-known work is admirably designed for the use of general practitioners and students of medicine, owing to its especially practical character. The various chapters have been revised and brought up to date, and although increased in size and the addition of new matter, it still forms a handy volume.

In a general view of the whole range of medicine, considerations of space do not permit of tropical disease being treated in great details, but there are good articles here on all the commoner complaints of the tropics, and bubonic plague has three and a half pages devoted to it. There are a few minor points which are rather overstated through incorporating some recent researches which have not yet reached finality. Thus our author says that the *amoeba coli* is 'constantly present' in tropical dysentery, a statement which has been shown in our pages of late to be not even generally true. We are glad to see that Dr. Osler does not recommend the use of ipecacuanha in dysentery. Amongst the topical injections upon which he places more trust he gives the chief place to solution of nitrate of silver, but makes no mention of the relatively harmless yet very effective boracic acid.

A Text-book of the Practice of Medicine.—

By J. M. ANDERS, M.D., LL.D., &c. 2nd Edition. Philadelphia: W. B. SAUNDERS, 1898. 8vo. Pp. 1287.

THIS text-book of medicine published in Mr. Saunders' excellent style is specially intended as a practical guide for students, and it is admirably adapted for this purpose. It uses bold catch-type freely and contains numerous useful illustrations and diagrams, including several skiagrams and four coloured plates. Differential diagnosis is assisted with no less than fifty-six tables; and many formulas

and prescriptions are introduced in the text. Altogether students will find it an attractive and trustworthy guide. As an instance of its usefulness it may be mentioned that in the treatment of Cholera-collapse, it figures and describes in detail the transfusion-apparatus, and how to work it. The diagrams to illustrate the complex nervous affections are particularly helpful. Some references are made to Anglo-Indian workers—by the use of a capital D the name of the talented investigator of spirillum fever is given an unwonted Dutch appearance—Van Dyke Carter.

Current Literature.

MEDICINE.

An Outbreak of Psittacosis.—The first number of a new French Journal *Archives Provinciales de Médecine* (January 1899) contains several articles of interest. We synopsis one on an outbreak of infection conveyed by parrots, a subject which has excited considerable attention in France of recent years, but which is seldom noticed by English writers.

The outbreak was confined to the household of one family living in a country-house near Rouen. On 14th May an old lady was attacked with a localised pneumonia and died in 4 days; on 17th May two more cases; 19th May two cases; 21st May one more; and the last case on 28th May. A parroquet had been purchased in Paris on 1st May, had arrived sick and had been petted and made much of by the whole family, some of whom even let it feed out of their own mouths, and in two instances it has bitten two persons and drawn blood. The servant who cleaned out the cage was also attacked. The family before this had kept no pet birds. One case was a nurse brought in to attend on the sick; she is noted to have disregarded the doctor's orders about the contagious nature of the cases she was nursing. Out of eight persons living in the house six were attacked and four persons died. A pet dog also suffered from symptoms, exactly the same as its masters. The symptoms were in all cases identical, pneumonia and diarrhoea; in some the lung trouble was predominant, in others the bowel complaint; in all a typhoid state soon supervened. The disease lasted about a week, and was attended with high fever, sweating, lung symptoms, diarrhoea, no rose spots, expectoration not copious, cough. The house was in good sanitary condition, and there had been no typhoid fever in the neighbourhood.

The sputum and blood was sent to the Rouen Laboratory for examination; no micro-organism could be isolated either in the specimens sent nor in the parrot's blood, spleen, &c. The bacillus of psittacosis is very difficult, it is said, to isolate in man. Nocard has identified a bacillus in parrots. Though no organism was identified in the blood, &c., of the sick, yet the affected blood produced an agglutination reaction with the bacillus of psittacosis from culture prepared by Nocard in 1892. The same blood which gave agglutination reaction with the bacillus of Nocard at 1 in 50 dilution, gave it with that of typhoid in 1 in 30 [dilutions of 1 in 30 with typhoid bacillus are not trustworthy], though the patient never had had typhoid fever, there was no agglutination with the *b. coli*. M. Nicolle claims that he has shown the possibility of a serum-diagnosis of psittacosis.

Treatment of Craw-Craw Ulcers.—The strong likeness of the ulcers known in Central Africa as crawl-craw to what is known in India as Delhi boil, Oriental sore, &c., makes the following extract from an article by

Dr. J. Emily, of the famous Marchand Mission, dated from Fashoda of special interest (*Archives de Med. Navale*, translated in *Journal of Tropical Medicine*, March 1899).

Craw-craw pustule is due, according to Dr. Emily, to a specific microbe, which finds entry into the skin through scratches and abrasions produced by the irritation of mosquitos, sandflies, &c. The pustules suppurate, and large unhealthy ulcers form which refuse to get well. Self-inoculation by the fingers scratching mosquito bites is usual, when one ulcer has formed. After trying many antiseptics and caustics Dr. Emily has got the best results from the following treatment. The skin is scrubbed with corrosive sublimate lotion and the ulcers mopped out with this (1 in 1,000). Scabs are removed by irrigation or by aid of a spatula. With a wet plug the sore is thoroughly cleaned, all pus must be removed, and a little bleeding is useful. This done, the ulcer cavity is completely filled with pure powdered boric acid. The edges must be quite covered with the boric powder. Over this spread gauze with boricated vaseline, a pad of cotton wool and firmly bandage up the limb. The dressing is not painful; the smarting passes off soon. This dressing is left on unchanged for 5 or 6 days, and on taking it off M. Emily states he has always found the crawl-craw healed over and cicatrised.

The boric acid, M. Emily thinks, has a specific effect on the microbe of the ulcer. The complete closing up of the sore after cleansing prevents fresh infection from outside.

Though we have not got crawl-craw in India, yet most of us have seen frightful ulcers among transport followers and doolie-bearers, in Burma and Lushai for example.* Moreover, the Delhi sore is not unlike this crawl-craw, and the thorough boric acid treatment might be useful in such sores in India. By-the-by M. Emily makes no mention of Manson's theory of the association of crawl-craw with the filaria perstans.

Notes on Paludism at Dakar in Senegal.—The *Archiv für Schiffs- und Tropen Hygiene*, for December 1898, besides noticing nearly all the articles read at the Tropical Section, B. M. A., at Edinburgh last July, has an interesting note on malaria in Senegal from the French of M. Clarac. There are about 800 Europeans in this station. Dakar has a good water-supply, and diarrhoea and dysentery are rare. The chief characteristic of Dakar climate is the complete disappearance of malaria during the months January to July, and its epidemic violence at the end of the rainy season when it spares none of the white population. A remittent type of fever with slight remissions, and with bilious symptoms often quite marked, is the usual fever at this season. The initial rigor is seldom noted or so slight as to pass unperceived. The fever lasts 3 or 4 days; in other cases by the appearance of "sub-intrant" attacks the fever becomes of a more continuous type. Real typhoid the author considers to be very rare at Dakar. He has often found Laveran's bodies, but has not found any connection between the types observed and the febrile symptoms.

Pernicious attacks are rare (2 per cent. of cases). Haemoglobinuric fever is endemic in Senegal. He does not appear to have found Laveran's bodies in these cases, at least he is silent about any connection between haemoglobinuric cases and malaria. One fact is certain. He notes that haemoglobinuric does not here occur in the malarial season, but in the dry season from December to April. All his cases had previously, however, suffered from malaria. Yellow fever is also present at Dakar. The death-rate of the blackwater cases was 30 per cent. As the early symptoms of haemoglobinuric cases resemble malaria, quinine has almost always been given. If, as often happens, the temperature falls, no more quinine is given, but if the fever persists, quinine is certainly given, often hypodermically with caffeine, to support the heart.

* Or "Among the Himalayas," p. 133.—W. J. B.

Another article deals with the health of the French troops in *Cochin China*. The mean death-rate *per mile* for past 7 years has only been 11.2.

Artillery soldiers seem to suffer most. This low death is probably explained by the high rate of invaliding from 228 *per mile* in the Marine Infantry to 349 in the artillery. Dysentery is the great cause of invaliding. Typhoid is prevalent and also cholera, but dysentery and chronic diarrhoea head the list.

The Urine in Blackwater Fever.—Now that so much attention is devoted to this disease, the following description of the urine, from a lecture by Dr. W. H. Crosse of the Royal Niger Company, is interesting. "The colour of the urine may be any shade between light red and that of porter, depending upon the amount of urine passed and quantity of colouring matter present. This is either oxyhemoglobin or methæmoglobin or both. Albumen is, of course, always present; as a rule, bile is absent [or of insignificant amount (Allbutt's System, Vol. II, p. 747.)] On shaking up the urine the froth is pink in colour. I note that Thayer mentions the froth as greenish, but I am certain that in these cases in W. Africa the froth of the urine is some shade of red. On microscopical examination none or only a few red discs are found, but hæmoglobin casts of the renal tubules are plentiful. Nothing else abnormal is constantly found. Bacteria and torulae grow freely in old urine. Jaundice is very common, though bile is usually absent from the urine. The jaundice does not produce itching of the skin nor a slow pulse." Crosse believes the jaundice precedes the hæmoglobinuria; it deepens when hæmoglobinuria is present and gives the patient a greenish yellow appearance. (*Lancet*, March 25th, p. 283.) The following discussion took place:—

"Dr. Manson said that he believed in the daily use of from five to 10 grains of quinine as a prophylactic, and mentioned the case of a missionary who, during a residence on the west coast of 14 years, had neglected this precaution on three occasions only and each time had an attack of fever, from which he had otherwise enjoyed exemption. Koch had called attention to the fact that in East Africa negroes coming from the interior who lived with and like the Europeans suffered to some extent, and that generally the natives were immune to the fevers of their own district but not to those of others. It should be remembered that the presence of a parasite did not prove it to be the cause of a disease; plasmodia were often found in persons suffering from typhoid fever since malaria predisposed to, though it had no connexion with, enteric fever. In China he had seen many cases of severe malaria and extreme cachexia but never accompanied by blackwater. Either some other factor was required or the plasmodia acquired different properties according as they had passed through the bodies of one or other species of mosquito. He might mention the case of a man who during a febrile attack after his return home passed black urine, but the colour was shown to be produced by an enormous excretion of indican, neither hæmoglobin nor albumin being present. Dr. Harford-Battersby enjoined caution in diagnosis, having himself observed epidemics in which the urine was almost black from bile pigments and blood, but which was not hæmoglobinuric; that in which Bishop and Mrs. Hill died with about 50 other Europeans was true yellow fever. The paludal fevers of Africa were far less distinctly remittent than those of other regions. Blackwater fever was certainly on the increase but seemed invariably to follow chills, indiscretions, or exposure to freshly turned-up soil. Vomiting was not a constant symptom; he had not vomited in any of his three attacks though he had mæna. Mr. Craister had taken quinine daily during his five years on the Niger, and he had only three very slight attacks of fever and none of blackwater fever. He had not lost one of the 11 cases of hæmoglobinuric fever in which he had given quinine from the first, or saved one of the six or seven in which he could not, they having been attacked while away up the

river. Dr. Washbourn from his study of paroxysmal and experimentally induced hæmoglobinuria could entirely confirm Mr. Crosse's explanation of the phenomenon. At first the liver transformed the hæmoglobin into bile pigment, but when the quantity exceeded the power of the liver the excess passed out by the kidney. Mr. Pakes referred to the Texas fever among cattle which was attended with hæmoglobinuria, and perhaps also hæmaturia, and in which large doses of quinine were beneficial. The action of habitual small doses of quinine was not exerted on the plasmodia so long as they were enclosed within the blood disc, but when, having sporulated and burst its walls the numerous progeny of the original plasmodium escaped, they were attacked and killed before they could invade other discs. Already seven varieties of plasmodia had been distinguished by Italian and German investigators, and if only one or two of these had the power of inducing hæmoglobinuria their geographical distribution, independent of the malignancy of local malarial fever, was easily explained."

How to Exterminate Locusts.—The Cape papers contain much on the subject of the new scientific method of killing off swarms of locusts. It appears that in 1896 some locusts died of a fungoid disease were brought by Mr. Cooper, a lawyer, to the Graham's Town Bacteriological Institute where Dr. Black found that this fungus could be cultivated, and that the cultivation would convey the disease to healthy locusts (*see Transactions of Cape Philosophical Society for 1897*). This fungus is now prepared in large quantity at the Institute and sold at a small cost. Dead locusts smeared with the fungus are scattered around on the ground and the locusts quickly take the disease. An easy way of multiplying the poison is to make a mixture of ground-up dead locusts and scatter it freely over the ground. Swarms of these destructive pests are in this way destroyed. The numerous reports on this method which have appeared in S. African papers are very encouraging. Dr. Edington, who is well known for his work with Koch on Rinderpest, is now making and supplying quantities of this locust fungus. Locusts are often very destructive in the Punjab and elsewhere in India, and a supply of Dr. Edington's locust fungus might well be indented for. It is said to be absolutely harmless except to locusts and hoppers.

W. J. BUCHANAN, B.A., M.B.

OBSTETRICS AND GYNÆCOLOGY.

Artificial Vagina in Congenital Absence.—Robert Abbe planned and carried out the following operation on a woman, 21 years old, who had no vagina: For several days the alimentary canal was made as empty as possible. A crescentic cut was made across the interlabial space, with concavity upwards, thus getting a little shelf of mucous membrane below the urethra to divert escaping urine. By blunt dissection a free cellular space was readily created between the bladder and the rectum to the depth of five inches. This was temporarily packed with sterile gauze to check oozing. Thiersch skin grafts were then cut from the thigh sufficiently large to cover an ample plug made thus: A thin French rubber condom was sterilized by boiling and stuffed with long strips of iodoform gauze to its full capacity. Upon this the skin grafts were spread with their edges freely overlapping. Numerous small punctures had been previously made in the rubber after stuffing, so that the gauze contents would receive any discharge lurking about. A piece of rubber tubing, the size of one's little finger, wrapped loosely about with iodoform gauze, was now inserted into the rectum with a view of permitting free exit of gas during the subsequent days of enforced constipation. Finally, the graft-covered form was carefully passed into the new vaginal space, the walls

of which were held apart by three deep retractors which on removal allowed the fresh surfaces to come into closest contact with the wet surface of the grafts. To prevent the plug from being in the slightest displaced, two silkworm gut stitches were passed across the vulva, transfixing the gauze-packed tampon, and tied over iodoform plugs at either side. The urine was drawn every eight hours for a week with such precaution that no cystitis resulted. The bowels were confined for ten days without the slightest discomfort to the patient. Light diet was given. No febrile reaction whatever followed. On the tenth day the retention suture was removed, the end of the plug cut, and the packing first removed before the rubber form. After cleansing, it was seen that the grafts had taken universally, and a new lined cavity had been created, four and one-half inches deep. The patient was married ten weeks after the operation. She keeps the vagina open by using a wax bougie part of every day. This bougie is held in place by a T bandage. If the plug is omitted for one or two weeks considerable shrinkage takes place, but the renewal of the plug overcomes this.—*N. J. Med. Recd.*, Dec. 10th.

Pessary in Gynæcology.—Dr. Ballantyne, after a critical review of the various authors, comes to the following conclusions:—(1) In cases of incomplete prolapse, suggest radical means of treatment first, but if these are objected to, treat by pessaries after explaining that their action is palliative. In complete prolapse recommend operative treatment, and even when patients object to it, do not advise pessaries.

(2) In anteversions of the uterus, pessaries are scarcely at all used. The normal position of the uterus is one of *mobile* anteversion with a small degree of ante flexion. Consequently so long as there is uterine mobility, do not think of treatment by pessaries save only when an enlarged and subinvolved organ lying anteriorly and at a slightly lower level than usual, when the insertion of an indifferent pessary, such as the ring, may occasionally give temporary relief from symptoms. When, on the other hand, there is not uterine mobility, pessaries are neither safe nor effective.

(3) In retroversion (i) With a uterus fixed by peritoneal adhesions no pessary is to be used; (ii) With a freely movable uterus, not enlarged, and with no pelvic trouble, there is no necessity for reposition and the pessary; but if there is bronchitis or the lifting of weights, then it is well to keep the uterus anteverted by a pessary. (iii) In retroversion of a freely movable puerperal uterus with no pelvic trouble there is no need for a pessary, but if there are to be strains and lifting weights, then use a Hodge or Smith pessary. (iv) In retroversion of the pregnant uterus use a Hodge or Smith up till the fourth month. (v) In retroversion with a movable uterus with pelvic symptoms but with neither ovary in the pouch of Douglas use the Hodge or Smith (vi) In retroversion of a movable uterus with pelvic symptoms and with one or both ovaries in the pouch of Douglas use no pessary till the ovarian inflammation has been diminished, then use first the ring and afterwards the soft Hodge or Smith or Thomas. (vii) In retroversion of a movable uterus with pelvic symptoms and old posterior perimetritis or cellulitis, follow much the same lines as those in the preceding rule.

Dr. Ballantyne asserts "that pessaries are necessary and not necessarily evil."—*Scottish Medical and Surgical Journal*, April 1899.

Post-Partum Hæmorrhage.—Arndt proposes a new treatment for atonic uterine hæmorrhage. Though deaths from post-partum hæmorrhage are not so common as formerly, now that the manual expression of the placenta has been limited to suitable cases. Dührssen's statement that in Prussia alone there is probably one death a day from this cause, shows the need of a reliable method of treatment. Dührssen's tamponade is valuable but is not without danger. Arndt's treatment consists in seizing the flaccid lips of

the os with one or two bullet forceps, and forcibly but slowly drawing the uterus downwards as far as possible. This is repeated three or four times until all hæmorrhages have ceased and the uterus is firmly contracted. This mechanical device acts, *firstly*, by rendering the uterus anæmic. This has long been known to operating gynæcologists. Winter, Hegar and others have proved that pæni-hystectomy, if even the gravid uterus, for cancer can be performed without danger from hæmorrhage, if this precaution is taken. *Secondly*, it not only arrests bleeding at once but stimulates the uterus to contract, and prevents its further relaxation; partly by the irritation of the automatic ganglia in the middle layer of the uterus and by stretching the uterine nerves in the broad ligaments, partly because anæmia of the uterus is one of the strongest stimuli to contraction. The great advantages of the method are its certainty, simplicity and avoidance of sepsis.—*The Medical and Surgical Rev. of Reviews*, January 1899.

Dr. Bastian describes another new method of treating this affection. It is efficient in promoting hæmostasis, no matter from what pathological condition it may result.

A bi-valve speculum (Cuseo's) introduced as high up into the vagina as possible, when it is opened as widely as can be done. Iodoform or merely sterilized gauze is taken and pushed energetically into the cavity, taking care to block up entirely the os uteri and fornices. During this, the uterus rises into the abdominal cavity, but the plugging is continued gradually until the vagina is filled up as far as the ostium. The quantity of gauze or pledgets required is sometimes very considerable. If a slight sanguineous discharge should continue, it is easily stopped by a further introduction of the gauze. The speculum is not withdrawn until the lapse of twelve hours, when some of the plugging may be removed. The rest of the gauze is to be removed twenty-four hours after its introduction. The subsequent course is normal. The mechanism of the proceeding is as follows:—If the hæmorrhage be from the vagina, the compression effected by the blades of the speculum prevents the escape of blood as well as the distension of the vaginal walls which occludes the vessels in it. If the blood come from the lacerated cervix, the direct compression of the bleeding points and of the trunk of the uterine artery itself at the base of the ligaments together with the stretching of these by the elevation of the uterus are all causes which arrest the blood flow. If it be due to uterine inertia, the elevation of the uterus which causes a stretching of the broad ligaments, occludes the vessels which they contain. The presence of the foreign body in the shape of the plugs also keeps up a certain degree of uterine contraction.—*Scottish Med. & Surg. Journal*, April 1899.

K. DASS, M.D.

PATHOLOGY AND BACTERIOLOGY.

Recent work on Tetanus.—Before coming to the subject of recent researches on cerebral tetanus and intracerebral injections of the antitoxine in the treatment of this disease, it may be well to briefly allude to the more important steps that have led up to our present school of knowledge on this important subject. These date from 1889 when Kitasato first isolated the bacillus of Nicotier in pure culture by exposing pus from a tetanus wound to a temperature which killed the other organisms present without destroying the spores of the tetanus bacillus, which then were easily cultivated anaerobically. It was next shown that the virus secreted by these organisms is the most virulent poison that has yet been discovered, and that in the smaller animals the injection of a minute dose of the toxine gave rise to fatal tetanus just as readily as that of the organisms itself. In 1891 (*Annales de l'Institut Pasteur*) Vaillard and Vincent went a step further and proved that an in-

jection of pure cultures of tetanus bacilli which were free from the toxine, either through having been grown at a low temperature for a few days only, or by being washed on a porcelain filter or heated to a sufficient degree to destroy the toxine without killing the spores, did not cause tetanus when injected subcutaneously into a susceptible animal. If, however, lactic acid was injected at the same time, which prevented the access of leucocytes, or certain other bacteria which were harmless in themselves, such as the micrococcus prodigiosus, were injected with the toxine free tetanus bacilli, then the disease was produced. These interesting experiments, together with others by Vaillard and Rouget (*Annales de l'Institut Pasteur*, 1892), in which they recorded that they had isolated various organisms from wounds in tetanus cases, which were proved to also assist the tetanus bacilli in germinating in the living tissues of animals, through drawing the attention of the leucocytes to themselves and so allowing the virulent organisms to multiply, explained why this disease comparatively seldom follows wounds which have been contaminated by earth, which so generally contains the tetanus germ, because the necessary assisting bacteria were not often inoculated at the same time.

It was at this period also that Behring prepared his tetanus antitoxine by injecting increasing doses of the toxine into susceptible animals with certain precautions; and he claimed that by the use of the serum so obtained, tetanus, which had already given rise to general contractions, could be cured; a claim which unfortunately has not been borne out by clinical experience. His statements were contested by Roux and Vaillard (*Annales de l'Institut Pasteur*, 1899) who showed that, after the symptoms of tetanus had once set in, considerable doses of a very powerful antitoxine failed in the great majority of the animals tested to arrest the disease, even when small doses of toxine free from bacilli were used; and what is more even when the blood of the animal experimented on was itself rendered so strongly antitoxic by the injection of large doses of the serum that the blood of the animal suffering from tetanus would itself protect mice from a minimal lethal dose of the toxine, yet the symptoms continued unabated and a fatal issue ensued. It thus appeared that by the time clinical symptoms can be detected the nervous system is already fatally poisoned, and antitoxine is of no avail in acute cases, although it is of some use in the slighter ones by neutralising any toxine which may still be formed in the tissues, and so preventing any additional poisoning of the nervous system. In this paper they give seven cases of tetanus in the human subject, two of which were slight and recovered, but the other five died in spite of four of them having received from 100 to 400 cubic centimetres of a very powerful antitoxine, and in spite of their blood being strongly antitoxic during life from this treatment. Two of these cases were, moreover, treated within two days of the onset of the symptoms. The comparative failure of this form of treatment was then explained. It should, however, be mentioned that the prophylactic use of the serum, more especially in animals that have been operated on, has given very favourable results, and is supported by experiments on animals. Thus, Nocard (*Recueil de Veterinaire Medicine*, August 15th, 1897) records that 2,300 animals were injected with the antitoxine immediately after operations, such as castration, etc., which are very frequently followed by tetanus in France, without a single case of this disease occurring, while 400 animals were injected from one to four days after accidental wounds, such as pricks from nails, etc., which are very often followed by tetanus, again without a single case.

The question remained in this stage until the classical experiment of Wasserman (*Berliner Munch. Med. Wochenschrift*, 1898, No. 1) opened out a new line of enquiry. The author mentioned showed that if a small quantity of tetanus toxine was mixed up with a little

brain matter, that after a short time the fluid was again separated by means of the centrifugaliser, that the fluid would then be found to have lost its toxic power and would no longer cause the disease even in such susceptible animals as the mice of guinea-pig? He considered that this fact supported Ehrlich's theory of immunity, and that the poison was absorbed by the brain cells, and an antitoxine developed in them. It was further claimed that injections of cerebral matter would protect an animal from inoculations of tetanus toxine. Once more the Paris school took up the question, and Metchnikoff (*Annales* 1898) showed that the brain of a tortoise, which is not susceptible to tetanus, had not the power of taking up the toxine, while that of the fowl had very little such power. The antitoxine was not formed in the brain, which, together with all the other tissues Marie (*Annales* 1897) had shown contained from ten to twenty times less toxine than there was in blood serum of the same animal. Metchnikoff also showed that when the brain matter was injected together with the toxine into an animal the disease was not produced because the leucocytes englobed the brain cells containing the toxine and destroyed the latter, the macrophages especially having this power (*Annales* 1898). This process is most marked in the peritoneal cavity, but takes much longer when the mixture is injected into the muscles, in which case the absorption sometimes fails and the disease ensues. Marie (*Annales* 1898, page 91) showed that if the cerebral matter is injected into a different part of the body to the dose of toxine, then it fails to prevent the development of the disease, even when it is injected twenty-four hours before the virus. The contact of the brain matter with the toxine is, therefore, necessary for the neutralisation of the virus. The affinity of the nervous tissues of susceptible animals for the toxine of tetanus causes it to absorb it as soon as it is brought to it by the blood, and consequently, by the time symptoms of the disease have appeared, the virus is already firmly fixed in the spinal cord and medulla, and no amount of antitoxine in the blood can dislodge it or cure the disease.

The next important contribution to the subject is the paper of Roux and Borrel (*Annales* 1898, page 225) on *tetanos cerebral et immunité contre le tetanos*, which demands fuller notice. They first point out the affinity of the nervous system for the toxine of tetanus, which reaches it either by directly along the nerves from the seat of its production, this part being the first to become contracted, and indirectly by the blood stream to the spinal cord and medulla. If, however, the toxine be injected directly into the brain, a disease, which is clinically quite unlike ordinary tetanus, is produced in rabbits, guinea-pigs, rats and mice. The symptoms are great restlessness, and peculiar behaviour which points to the presence of hallucinations, a tendency to fly and hide in corners of the room, epileptiform convulsions, polyuria and a peculiar walk, but no permanent contractures such as always occur in ordinary tetanus in these animals. Moreover, these symptoms are produced by about one-twentieth of the minimal fatal dose of the virus given subcutaneously. The animals appear to be well between the convulsive attacks, but death occurs in from twelve to twenty-four hours in the case of rabbits and very similar symptoms are seen in the other animals mentioned.

Again, animals that have been given a passive immunity from lethal doses of tetanus toxine administered subcutaneously, by the injection of large quantities of the antitoxine until there blood is antitoxic, will nevertheless succumb to a very minute dose of the toxine given intra-cerebrally, just as quickly as the control animal. This experiment may sometimes fail if a small hæmorrhage takes place at the seat of the injection, which allows of the antitoxic blood to destroy the minute dose used. An active immunity of marked degree, moreover, in the case of guinea-pigs failed to prevent the death of the animals after the intra-cerebral injection.

tions of a small dose of the virus, although in this case the disease ran a slower course than usual. This proves that the antitoxine is not formed in the nervous system as Ehrlich supposes, and that immunity is not due to these cells becoming accustomed to the action of the toxine.

The next question that arose was the effect of intra-cerebral injections of the antitoxine in the treatment of tetanus. Experiments showed that in the case of guinea-pigs the injection of four drops of the antitoxic serum into each cerebral hemisphere, from twenty-four to thirty-two hours after the first onset of symptoms of the artificially produced disease sufficed to cure the animal, although the local contractions that had already occurred before the injections persisted for a month, the animal being otherwise quite well, while all the controls died in a few days. Injections at later periods were less certain and sometimes failed. This showed that the injections prevented the rest of the nervous system from being attacked, although they did not neutralise the poison already in the spinal cord. Moreover, large quantities of antitoxine under the skin failed to save control animals, so the good effect of the intra-cerebral injections was evident. Injections into the sub-arachnoid space did not give as good results as the intra-cerebral injections, although much better ones than the subcutaneous treatment. The authors deprecate the flooding of human brains with tetanus antitoxine until it has been tried on the larger animals, but since their paper was published some twenty cases of tetanus have been treated in or near Paris, while a successful case was recorded in the *British Medical Journal* of January 7th of this year by Major Semple of Netley.

It will have been observed that most of the work that has led to this happy result has been carried on during some ten years in a series of patient researches in the Pasteur Institute in Paris, and it encourages the hope that when in the near future research laboratories are started in India, that similar triumphs over some of the more important tropical diseases may in due time be achieved. As, moreover, a tetanus antitoxine will shortly be made in the bacteriological laboratory of the veterinary department for use in animals, it is perhaps not too much to hope that the Government will not be less mindful of human life and that steps will also be taken for the supply of this now doubly important antidote to lock-jaw for use in Indian hospitals.

L. ROGERS, M.D., F.R.C.S.

Medical Societies.

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY.

THE usual Monthly Meeting of the Bombay Medical and Physical Society was held in the University Library on Friday, March 24th, 1899, at 5-15 P.M. *Vice-President*: Lieut.-Col. W. K. Hatch, I.M.S., in the chair. *Present*: Lieut.-Col. Henderson, Dr. R. M. Kalapesi, Dr. D. R. Bardi, Dr. Deane, Captain Dyson, Dr. C. R. Marrett, Dr. D. A. D'Monte with Capt. Meyer, I.M.S. (*Honorary Secretary*).

The following papers were read and discussed:—

THE CARBOLIC ACID TREATMENT OF TETANUS.

By LIEUT.-COL. W. G. H. HENDERSON, I.M.S.

I WISH to bring before the notice of this Society the subject of the treatment of tetanus by carbolic acid. The treatment is not

a new one: a few cases have been recorded in which it has been successfully tried. Poli records a case of a boy kicked by a horse who developed tetanus; carbolic acid was injected hypodermically, and chloral and bromide of potassium were administered internally with the result that the boy was discharged from hospital cured 16 days after the commencement of the treatment and 22 days after the first symptom of the disease manifested itself.

Shortly after my coming to Bombay I paid a visit to Messrs. Scott & Co.'s Livery Stables where I saw a horse suffering from a very severe attack of tetanus, a disease which I have no doubt you are aware horses are peculiarly liable to contract in this city.

Through the kindness of Mr. Place, the Veterinary Surgeon in charge, I was allowed to examine the horse and learnt that 10 c. c. of a solution of dried antitoxic serum had on two occasions been introduced into the jugular and that considerable aggravation of the symptoms had followed. The case appeared hopeless. A drachm dose of pure carbolic acid was then injected into the subcutaneous tissue and repeated in an hour; some amelioration of the symptoms followed. The treatment was persevered in, with the result that the horse was completely cured. During the treatment more than 2 oz. of pure carbolic acid was injected. There was some local swelling and inflammation at the seat of the injections. A second case which I saw under similar treatment ran an equally favourable course. In a third early injections of carbolic acid seemed, in Mr. Place's opinion, to cut short an impending attack. I was much impressed with the success which attended this treatment and determined to adopt it with suitable modifications in my own hospital. From July last up to the present time 20 cases have been treated by me. With one exception all have been treated with carbolic acid hypodermically and in addition with chloral and bromide of potassium. Of these 20 cases 7 have recovered. Many of the fatal cases were brought in a hopeless state and died within a few hours of admission to hospital. I have tried to find out how long the cases had been suffering before seeking relief, but the information received has been so contradictory and confusing that it is impossible to rely on it. The routine treatment was as follows: On admission the patient was ordered chloral and potassium bromide; 15 grains of each to be repeated every second or third hour as the severity of the spasms demanded. Two minims of carbolic acid in 20 minims of water were injected and repeated 3 times a day. When possible milk was given by the mouth and nutrient enemata when necessary. In one case which recovered I omitted the carbolic acid injections, and although the case left the hospital cured, I think after careful observation that the sedatives without the carbolic acid did not so effectually relieve the spasms as the combinations did. Glycerine of carbolic acid in 10-minim doses has been given in addition by the mouth in a few cases. In no case has the injection caused the slightest trouble although patients have received as many as 150 injections. The urine of these under treatment is always kept for my inspection, and I have never seen any change in it which could be attributable to the influence of the medicine.

In my cases the success attending this treatment may not appear to you to warrant my bringing it before you on the present occasion. There is always the question lurking in the background, what would have been the result had the injections been omitted and what grounds are there for supposing that they aided in any way the actions of such valuable sedatives as those given in the cases just enumerated? In answer I can only say that I have watched the cases very carefully and with great interest, and I am convinced that the treatment is not only capable of steering the patient through an attack and producing a cure, but that it has a salutary effect in allaying the spasms and lessening the sufferings of those in whom the attack proves fatal. I take it that one of the greatest advantages of a society such as this is the opportunities it affords of bringing forward for discussion, and I hope for further trial, methods of treatment which nothing but a wider experience can prove worthy or unworthy of future consideration.

Dr. Kalapesi asked Dr. Henderson if he could give any theory of the method of action of the carbolic acid, e.g., whether it acted on the bacilli in the wound or by chemical action. He also could not understand why the patients did not suffer from carbohuria.

Lieut.-Col. Hatch remarked:—Having just read an extract from a paper on carbolic acid treatment of tetanus in which 21 cases were treated without a single death, I am rather disappointed to find that Colonel Henderson had a mortality of 7 out of his 21 cases, and I suppose we must attribute this to the severe class of cases we meet with in Bombay. As the antitoxin treatment is not I think so far successful when applied hypodermically and the two cases treated in the J. J. Hospital by injection into the brain having also died, I was in great hopes of hearing of Colonel Henderson's success with carbolic acid. It appears from the extract to which I refer that the acid acts as a sedative also and that morphia and bromide are not required in addition.

Dr. Henderson, in reply, said that with regard to the action of the medicine in tetanus what he meant to draw attention to, was the large amount that the patient could stand without symptoms of any poisonous effects following its full dosage and long conti-

nued use. In no case was the urine in any way discoloured, and he attributed this immunity to the toleration of the drug owing to its beneficial action in ameliorating the worst symptoms of the disease. As to the manner in which this was accomplished he said that he referred to this subject with a certain amount of diffidence: he thought that perhaps the acid might act chemically in destroying or neutralizing the toxin or its effects. With reference to the chairman's remarks he quite agreed with him in his opinion that the results were not very encouraging, but that watching the effect of the drug he (Dr. H.) thought it might be of some service to bring this treatment before the notice of the Society. The cases of tetanus which he had seen in Bombay were very severe and many were brought to hospital in a moribund condition. He had not felt justified so far in withholding the bromide and chloral, but with increasing confidence in the carbolic acid he proposed, for the future, to depend on it alone in oftener repeated and perhaps large doses.

RADICAL CURE OF HYDROCELE WITH IODOFORM.

DR. R. M. KALAPESI read a paper on this subject. Dr. Masina, F.R.C.S. (Eng.), Hony. Surgeon to the Jamsetji Hospital of Bombay. Dr. Hatch said he did not know whether or no Dr. Masina, who claimed apparently to be the originator of the iodoform treatment of hydrocele, was a member of the Society. If he were, it would have been more satisfactory if he had read this paper himself. He believed the method had been tried long ago in the J. J. Hospital at Dr. Wellington Gray's suggestion. Dr. Kalapesi spoke with certainty of the obliteration of the sac in his cases, but according to his (Dr. Hatch's) own experience it was impossible to tell during life, and without dissection, if the sac were obliterated. Complete obliteration for a complete cure was not necessary. He considered that injection of the sac with perchloride of mercury was the best method, the treatment giving little pain and poisonous symptoms from the absorption of the mercury resulting only in one of his numerous cases. It was a pity that this method had not been compared in its results with the iodoform treatment.

SOME SURGICAL CASES.

By LIEUT.-COL. W. K. HATCH, I.M.S.

I.—Depressed Fracture of Skull.

THIS patient came from Persia and may have been a perfectly harmless individual, but his looks were somewhat against him, and his occupation was, as he stated, that of a shepherd, most probably with a little fighting at odd times where a favourable opportunity presented itself. He had enjoyed perfect health up to 18 months ago. He was attacked by two men, one of whom struck him on the head with a large stone. He became unconscious; he came to me after a short time, but was so weak that he was unable to move from the spot for two days but managed to crawl home. He lost a great deal of blood and was laid up for two months, and was treated with cold water application; during that time his right leg became rigid and he could not move it. The leg improved gradually, but his gait became more and more unsteady. On admission into hospital on October 14th, 1898, he was well nourished and healthy looking. The student who wrote the case described him as having a pleasant expression, but this, I am afraid, is rather euphemistic. On the summit of the skull, one-third of an inch behind the centre of a line between the root of the bone and occipital protuberance, was a deep depression about the size of a large watch glass, the margin involved the sagittal suture; at the bottom of this was a conical cicatrix and the surface felt irregular. There was no pain on pressure at any part of the skull. He was intelligent; sensation was in no way impaired and reflex of the right leg were rather more exaggerated than on the left. His gait was staggering and both legs were slightly dragged, the right more than the left. He walked very slowly and could not turn if the eyes were closed; if open he managed to turn in an awkward fashion. No abnormal sensation present in the feet and no sign of any syphilitic disease present. No pain was present, and his temperature was normal. On the 20th October he was chloroformed. I then raised a flap of skin from the depressed area. Two circular pieces of bone were removed by the largest trephine, and then with chisel and mallet the whole of the depressed bone was cut away, the margin of the superior longitudinal sinus was exposed. The surface of the dura mater was darker than normal and it was considerably depressed. The flap of scalp was then replaced, but the bone was not. On the next day his temperature went up to 103.8 in the evening but fell to 99.8 the following morning, after which it was normal and the patient made a good recovery. The pulsation of the brain could be easily felt through the scalp, but no improvement in the gait was noticeable. Thinking that the dura mater should be opened and the brain examined for splinters of bone I again operated on the 6th of December. The same flap of scalp was dissected up and the dura mater exposed; it was then opened and near the margin of this bone the sup. longitudinal sinus was opened. The bleeding which was free was arrested with little

difficulty by pressure. The surface of the brain was depressed, and on pressure with a finger it sank in as if there was a cavity and then slowly expanded. The upper surface of the cerebrum and also the inner surface of the median fissure was carefully examined, but no portion of bone could be detected. The softened area of brain was then incised and a dark almost fluid material was found to be present in that portion. It was evidently disorganized brain substance; some of it was removed. The membranes were brought together and then the flaps externally. Next day his temperature was 100 and he complained of pain in the legs and inability to move them, but the following morning he could flex his left leg by the right, being exceedingly weak. The wound healed by first intention and he gradually recovered, but the right leg continued to be weaker than it was before the operation. On the whole his gait was rather worse than on admission and occasionally tingling in the right leg was complained of, and peculiar creeping sensation along the spine and in both feet. As I could not give the patient any prospect of improvement he went at the end of January to his native country.

II.—RESTORATION OF MEMBRANA TYMPANA IN A FRACTURE OF BASE OF SKULL.

The patient, a Hindoo youth of about 18 or 19 years of age, fell from a scaffolding, a height of 20 feet, and was admitted in a semi-conscious condition on the 17th February, pupils being dilated, the pulse slow and compressible, and hemorrhage from the right ear and also from nostrils present. There was a contused wound over the right parietal bone, and he vomitted once after admission.

Next day he was still semi-conscious, pulse 78, temperature 99.8, respiration 18, bleeding constantly going on from the right ear, and from the nose.

He was conscious on the following day, but seemed languid and irritable. On the 20th the right tympanum was seen to be dark-red from blood stain. The right side of the face was found to be paralysed, and hearing, judged by a watch, was about one-sixth of the normal. On the 24th, examination of the ear was again made, and the drum was entirely dark-green and bulged. On the 27th there was a perforation in the membrane of the ear and the whole of membrana tympani was found to be destroyed, leaving the nearest line only on the posterior and lower walls. On the 1st March the hearing had improved to half of the normal, paralysis remained unaltered. On 3rd March it was noted that the membrana was being rapidly restored, a reniform perforation near the centre. On the 6th the perforation was circular in shape and the membrane bluish-white in colour, and the opening was still smaller; on the 8th, hearing being nearly restored to normal. On the 11th, he could hear as well as with the sound ear, the perforation was the size of a pin's head, facial paralysis alone remained unimproved. He was discharged next day at his request.

Restoration of the membrana tympani which was almost completely destroyed as in this case is not common; its rapid growth and return of hearing was also remarkable. I am sorry that I cannot show this patient, as he was not intelligent and has not returned as requested to the hospital for inspection.

III.—EPISPADIAS.

A Hindoo boy, aged 6, was admitted into hospital on 12th of March 1898, with epispadias. On examining the parts the penis was found diminutive with prepuce somewhat redundant below. On the dorsum at the root was an opening from which urine passed and prolonged from this a shallow groove lined with mucous membrane, extending as far as half the length of the glans penis. The corpus spongiosum was entirely absent, the organ felt very thin and flat in consequence. As the boy was very dirty and smelt strongly of urine he was bathed well for several days, and on the 25th I performed the following operation, a description of which I had seen in the *British Medical Journal* of last year, and which had been performed in a similar case with good result. I first dissected the mucous membrane off the dorsal groove and then separated the urethra tube as low as I could. The corpora cavernosa were then dissected apart by an incision in the median line aided by the handle of the scalpel. The urethra and mucous membrane were then pushed from the above through the cleft penis to the under surface which was incised beforehand in the median line near the end for about half its length, fine catgut sutures were inserted in the strip of mucous membrane which was then made tubular for a short distance, but the new urethra did not reach sufficiently far, consequently I inserted a small drainage tube nearly into the bladder, fixed it with suture and united the incision I had previously made over it. This part of the operation was quite successful ultimately, and the urine no longer issued from above but from the drainage tube. Although sutures had been placed above to bring together the raw surface no union took place, and I was therefore obliged to refresh them and again insert others at a later operation, from which the boy has just recovered. I now show you the patient so that you can judge of the result; the tube is shortened, but still *in situ* in order that there may be no likelihood of the orifice contracting.

Correspondence.

NITRIC PEROXIDE AS A DISINFECTANT IN PLAGUE AND JIGGER.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In your issue of this month there is an article by Mr. E. C. Cotes, M.A., under the head of Jigger or Chigo, in which it is stated as follows in regard to the importation of mice infected with jigger:—

"It may be added that the burning of sulphur on board-ship is quite useless against such insects as the jigger, though it is possible that it might have some effect in killing rats that might otherwise convey the infection."

Mr. Cotes further states that if any case of the disease occur on board it should be "swabbed down with kerosene oil."

There cannot be thorough disinfection unless some good gaseous disinfectant is used either alone, or along with some liquid disinfectant.

With a view to ascertain the relative value of disinfectants, some experiments were made at Baroda, which showed that nitric peroxide and chlorine were far better than sulphur fumes.

Nitric peroxide can be easily prepared, as no apparatus or skilled labour is required for it. In one experiment infusoria were destroyed by the gas in question.

In order to ensure thorough disinfection the gas is required to be used in a large quantity.

In a book called "Workshop Receipts," it is stated as follows:—"A commission of the French Academy report that nitric oxide is a most potent disinfectant, being greatly superior to every other substance as regards its action on infectious germs. The gas is applied by mixing in a two-gallon stoneware vessel two quarts water, 3½ lbs. ordinary commercial nitric acid, and ½ lb. copper turnings. The gas thus evolved is sufficient to disinfect a room containing thirty to forty cubic yards; the crevices in the doors and windows should be covered over with gummed paper to avoid loss of fumes."

When plague was prevalent in the Baroda territory, a number of houses were disinfected with the above gas, and the results were satisfactory. During disinfection the doors and windows of the houses were merely closed; the crevices in them were not covered over with gummed paper.

I would in the interest of public health beg to suggest that experiments might be made to ascertain whether jigger is destroyed by nitric peroxide.

BARODA, } Yours faithfully,
19th May 1899. } SHAMSUDIN J. SULEMANI.

SANITATION IN CANTONMENTS.

To the Editor of "THE PIONEER."

SIR,—In view of the immense importance of the subject will you kindly grant me space and your powerful aid to bring public opinion to bear on the matter? I mentioned in my letter in your issue of 30th ultimo that I had been advocating a departure from the present abominable practice of loading the soil in the immediate vicinity of cantonments with nitrogenous material. The "Septic Tank System of Sewage Treatment" was adopted as an abstract principle by the Cantonment Committee here last June. The reason given for not carrying out improvements is "want of funds" and it is doubtless a perfectly true reason. Now, what I say is this—is it fair to the troops, or to the several Cantonment Committees, that urgent sanitary reforms cannot be effected for want of funds? The British Government sends out to this country men who are necessarily not inured to the climate, and who for the preservation of their health should be placed in the best hygienic surroundings. The only funds available for sanitary improvements of all sorts are the Cantonment Funds—which all will admit to be absurdly inadequate for the purpose. The Government of India cannot afford to pay for these improvements. It follows that the Home Government, in the name of all that is reasonable and truly economical, are morally bound to supply the necessary funds. Enteric fever is everywhere rife, special sanitary officers are appointed to bring about sanitary improvements, and yet after the lapse of a twelve month a most pressing reform remains yet to be initiated on account of "want of funds." There are two other points which I should like to mention. The enormous native population living in cantonments should be immediately and vastly diminished. Many people would be astounded if they only knew the number of natives living in their own compound—amounting, I know, in some cases to 50. This huge native population in cantonments greatly increases the difficulty of the question of sewage disposal, and is most undesirable in every way. My second point is that I would abolish all

native shops in cantonments for the sale of food and drink to Europeans, and would establish in their stead Government markets under European supervision. I would reduce, as I have said, the number of natives living in cantonments to the lowest possible number, and I would insist on their living in moveable habitations, so that they should from time to time camp on fresh grounds.

LUCKNOW: } J. R. FORREST, Major, R. A. M. C.,
6th May 1899. } Sanitary Officer, Oudh District.

FILARIAL METAMORPHOSIS IN THE MOSQUITO.

(To the Editor of THE AUSTRALASIAN MEDICAL GAZETTE.)

SIR,—In the issue for June 20th, 1898, there appeared a letter from me asking for information on the above subject. I was anxious to learn whether anyone had written upon Filarial Metamorphosis since Manson's book appeared.*

No one replied to my enquiry except Dr. Patrick Manson, who directed me to a later work of his published in the Transactions of the Linnean Society of London.† This bears the date March 6th, 1884, whereas the book was written in June, 1883.

Dr. Manson wrote that nothing had been done since his paper in the Linnean Society's Transactions, and he encouraged me to investigate the subject. Recently I have made some observations on the life-history of the "House Mosquito," *Culex ciliaris*, Linn., described by the late Fred. A. A. Skuse.‡

This mosquito, which, it is thought, had been introduced into Australia from Europe, is thoroughly domesticated, and can be bred and kept in confinement in suitable vessels with the greatest ease.

Tradition says: "A mosquito lives a day or two; that it feeds but once, afterwards retiring to some quiet spot where the ova are matured, the eggs laid in water, after which it dies; that the male mosquito does not feed, etc."

Dr. Manson thought that it rarely occurred for them to live seven days after their meal of blood. My own investigation into Filarial Metamorphosis last year tallied exactly with Manson's in respect to mosquitoes, and also in respect to the metamorphosis, except in one important item. I had never seen the actively moving filaria, the last stage of the metamorphosis; this, according to Manson, was to be seen occasionally in mosquitoes that died on the sixth or seventh day. It never occurred to us that our mosquitoes wanted to be fed, consequently they died of starvation about the sixth day, and before the filariae had developed sufficiently.

In confinement it is necessary to feed mosquitoes. Various methods and foods were tried, with very little success, until ripe bananas were given, which proved to be a most suitable food; it was noticed that both male and female mosquitoes sucked the juice of the banana almost every day. It was also found that mosquitoes would live in glass vessels up to two months; the life of a mosquito is, therefore, not one or two days, but a month at least, and frequently two months. Lately I have been able to resume the investigation into Filarial Metamorphosis, thanks to the Queensland Branch of the British Medical Association, and have seen the actively moving metamorphosed filariae in the thorax of mosquitoes, but not before the sixteenth or seventeenth day; they are to be seen in every mosquito which has imbibed filarated blood seventeen days previously. Dr. Manson saw them in mosquitoes that died six or seven days after their last feed of blood, but those particular mosquitoes had, I believe, fed on filarated blood ten days, at any rate, before they came into his possession. The embryo filaria, when it is taken into the mosquitoes' stomach, measures $\frac{1}{16}$ " in length by $\frac{1}{32}$ " in breadth; on the seventeenth day it measures $\frac{1}{16}$ " by $\frac{1}{32}$ ", and it is not killed when put into water.

I believe now with Manson that water is the medium by which the young filariae are transferred to the human host. I should like to see the crucial test applied to set aside for all time the doubt as to whether the mosquito is or is not the agent by which Filariasis is transmitted from man to man. I suggest that this should be done in the following way:—Induce a life-sentenced prisoner to submit to swallow some of the advanced metamorphosed filariae on condition that he receive a free pardon. I fear, however, that without the influence of the whole medical profession it would be hard to persuade any of the Australian Governments to grant the free pardon. By grossly infecting the prisoner, his life might be endangered, but with the object of proving that the disease can be so transmitted only a few filariae need be given him, and these would cause very little, if any, inconvenience.—I am, sir, yours, &c.

THOS. L. BANCROFT.

BURFENGARY, }
March 1st, 1899. }

* The Filaria Sanguinis Hominis. H. K. Lewis, London.

† Vol. II., part 10, 2nd series, Zoology.

‡ Proceedings of the Linnean Society of New South Wales, Vol. III (series 2nd), p. 1748.

DUFFERIN HOSPITALS IN BENGAL.

To the Editor, "THE INDIAN MEDICAL GAZETTE."

SIR,—In the last Annual Report of the Dufferin Association, which you noticed in the April issue of the *Indian Medical Gazette*, it is to be regretted that, in the case of Bengal, the names of the Civil Surgeons whose reports are generally printed verbatim are this year for the first time omitted; thereby depriving them of the slight *kudos* they might get, and which they have earned for the considerable amount of gratuitous work they do for this Fund. Indeed, it may be said with truth that but for their supervision and fostering care, it never would have been so successful as it has. And it is remarkable that it should be confined to the Bengal branch of the report.

JUSTICE.

Service Notes.

ARMY MEDICAL SERVICE.

ON the vote of £305,800 for the medical establishment of the Army, Dr. Clark asked whether sufficient candidates for the Army Medical Service were now forthcoming, and Mr. Powell Williams replied that there were now two candidates for every vacancy. Colonel Welby urged the War Office to consider the expediency of attaching a senior medical officer to every regiment in the country, and other members raised once again the question of the nursing arrangements for the troops at Cairo and Alexandria after the battle of Omdurman. Captain Norton, being dissatisfied with the Ministerial explanation on this subject, moved to reduce this vote, but this amendment was negatived on a division.

LIEUTENANT-COLONEL writes in the *British Medical Journal*:—I agree with Surgeon-General Hamilton that it would be of decided advantage to fix the age of entrance into the R.A.M.C., at from twenty-two to twenty-five, instead of twenty-one to twenty-eight. The present rule makes too great disparity in age between officers whose commissions are of the same date; while men over twenty-five on entrance can seldom reach the administrative ranks and so serve on without hope. I would further limit the numbers who attain the rank of Lieutenant-Colonel to those actually required for the more important posts, instead of automatic promotion after twenty years' service. Requiring men of that rank to perform duties the same as when they entered the service only lowers the rank in the estimation of the army. Let promotion to the rank be by selection and limited in numbers; but do not interfere with the pension of Majors after twenty years' service which would avoid the hardship of non-selection; men passed over should be made to retire.

GOOD SERVICE PENSIONS.

A CURIOUS grant of a good service pension appears in this week's *Gazette of India* writes the *Pioneer*, the recipient being Sir Joseph Fayrer of the Indian Medical Service, retired, in place of Surgeon-General Cleghorn, who resigns the pension on retirement. As far as eminent service goes, there can, of course, be no question of Sir Joseph Fayrer's claims, but if his career has been distinguished, it cannot be said to have missed reward. After quitting the Indian Service, where he had held for many years the principal position in Calcutta, he became President of the Medical Board at the India Office, and retained this enviable appointment for twenty years, with the liberty of combining with it an extensive private practice. To create an exception in favour of an officer whose career has been fortunate beyond that of any of his contemporaries, by bestowing on him twenty-five years after retirement a pension that is all but invariably reserved for those on the active list, is a proceeding for which there may be strong grounds, but which, in the absence of explanation, will be liable to appear to the men of the present as something very like an injustice.

SHOULDER-STRAP BADGES.

WITH reference to Army Regulations, India, Volume VII, page 8, the following brass distinctive badges are to be worn on the shoulder-straps by officers and warrant officers of the Medical Services in India:—

"R. A. M. C." by the Royal Army Medical Corps.

"I. M. S." by the Indian Medical Service.

"S. M. D." by the Indian Subordinate Medical Department.

DR. THEODORE DUKA is the author of a book entitled *Kossuth and Gergely—Recollections of a Stormy Period—A Historical Essay*—recently published by S. Austin and Sons of Hertford. In this work the Hungarian struggle for independence in 1848 is placed

in a new light. Dr. Duka, who is a Surgeon-Lieutenant-Colonel of the Bengal Army on the retired list, is also the author of *Life and Works of Alexander Csoma de Kőrös* and of many contributions to the medical journals of this country and of Hungary.

UNDER the management of that experienced sailor, Colonel Hall, I.M.S., the Inspector-General of Hospitals, N.-W. P., the yachting season at Naini Tal affords every promise of pleasant sails and good racing. The *Uddia*, owned by the Commodore, retains her fame as a handy vessel, and has begun her 1899 career well by securing first prize in the principal event at the opening regatta. Yachting at an altitude of 5,000 feet above sea-level possesses the charm of novelty, and the number of owners is as large as in past years. The white sails gliding past the wooded shores of Ayarpatia, or standing out in striking contrast to the dark shadows of the Smugglers' Rock, form one of the prettiest as well as the most unique charm of Naini Tal scenery.

THE annual dinner of the Royal Army Medical Corps will be held in the Whitehall Rooms of the Hôtel Métropole, London, on Monday, June 12th, 1899, at 7-45 P.M. The Director-General will preside. The Honorary Secretary of the Dinner Committee is Lieutenant-Colonel J. Hector, R.A.M.C.

THERE is some likelihood that the appointment of Adjutant of the Depot of the Royal Army Medical Corps at Aldershot will be offered to Captain Tyrrell, who is at present officiating as Personal Assistant to the Principal Medical Officer, Punjab Command, when Major Julian's tenure of the appointment expires in June.

THE Queen has conferred the decoration of the Royal Red Cross upon the undermentioned ladies: Miss Catherine Sarah Mowbray, late Indian Nursing Service; Miss Mary Ellen Barker, Indian Nursing Service; and Miss Theresa McGrath, in recognition of services rendered by them in connection with nursing the sick and wounded during the late operations on the Punjab Frontier.

AN increase of three appointments to the cadre of the Indian Medical Service has been sanctioned by the Secretary of State to enable Agency Surgeons to be posted to the Eastern Rajputana States, Bundelkhand and Malwa. Surgeons to Deoli and Gilgit have also been sanctioned.

MAJOR R. ROSS, Indian Medical Service, who is at present in England on leave, has been appointed lecturer on Medicine Diseases in the new school of Tropical Diseases, which was opened at Liverpool by Lord Lister a few weeks ago.

MAJOR DAVIS, R.A.M.C., who has been engaged lately on bacteriological and special sanitary investigations, has been granted an extension of one year. Among other reports he has sent in an excellent one on Poona, Mhow and Rangoon.

COLONEL D. SINCLAIR, Chief of the Civil Medical Department, Burma, has been appointed Surgeon-General with the Government of Madras, *cire* Surgeon-General Sibthorpe.

SURGEON-GENERAL PRICE succeeds Surgeon-General Churchill on retirement on 14th June.

Obituary.

GEORGE CHARLES WALLICH, M.D.,
L.R.C.S. ED.

SURGEON-MAJOR, I.M.S., RETIRED.

DR. WALLICH, whose death was announced on the 30th March, at the advanced age of 83, received his medical education in Edinburgh, and there obtained his L.R.C.S. and M.D. with honours. Soon afterwards he entered the Indian Army, and joined his father, Dr. Nathaniel Wallich, in Calcutta, there well known as a distinguished man of science and an ardent botanist, and for many years in charge of the Botanical Gardens, Calcutta. His son inherited the scientific bent of his father, early displaying a deep interest in the pursuits of natural history, and especially with regard to the microscopic forms of life. On attaining the rank of Surgeon-Major, he retired from the service and returned to England. He subsequently obtained the appointment of naturalist

to the expedition despatched in 1860, under the command of Admiral Sir E. L. McClintock, to survey the proposed North Atlantic telegraph route between Great Britain and America. The information thus obtained of the seabed of the Atlantic proved of great value, assisting much towards securing success for all future works and undertakings of the kind. So much new material had been accumulated by Dr. Wallich, and so many important observations made of the geological formation as well as of the fauna of the ocean bottom, that "my Lords of the Admiralty" saw fit in 1862 to sanction their immediate preparation for publication, stopping that, however, at the first volume. Luckily for science, the *Challenger* Expedition met with more generous treatment from the Government of a later date, and its accumulation of scientific facts and valuable material have been fully laid open to the public. The work of deep-sea dredging was much facilitated by the improvement he made in the machine previously in use, and whereby he brought animal life from great depths to the surface without mutilation, while his microscopical knowledge assisted much to finally settle the question as to the precise nature of the slimy viscid mud which was brought to the surface. Huxley, in 1858, attached much importance to this ooze, and looked upon it as entirely novel, believing it to be "*living protoplasm*." Carpenter, who fully studied the same during the laying of the Atlantic Cable ten years later, supported Huxley's view, as also did Professor Hæckel, who even went further and believed it to be "*a plasmic substance of spontaneous generation*." Whereupon Huxley and Carpenter accordingly named it "*Bathylbius Hæckelii*." This, of course, Wallich proceeded to show was an entire mistake, that the supposed newly-discovered substance was nothing more than chalk-ooze common to the Atlantic bed, liquefied by a pressure at some 5,000 or 6,000 fathoms depth.

The discussion for some time waxed warm, but eventually Huxley admitted his mistake. Carpenter, however, never forgave Wallich, and when at a subsequent period friends thought the Fellowship of the Royal Society ought to be bestowed upon one who had done so much good work, Carpenter, it is said, strongly opposed and voted against his admission. Dr. Wallich had undoubtedly a fair claim to the honour, and his rejection embittered the rest of his days. His microscopical work was solid and of great worth, while his researches in Algal forms of life, the Diatomaceæ in particular, were of the highest value. He discovered and described many new forms of diatoms as well as Radiotaria, and was the first observer to demonstrate the nucleus and contractile vesicle in Gromia. It would, in short, require much more space than we have at command even to enumerate his extensive and important discoveries.

The Gold Medal of the Linnean Society of London was awarded to Dr. Wallich last year by the Council in recognition of his researches into the problems connected with bathybial and pelagic life, the Council being of opinion that such originality, accuracy, and keenness as an observer peculiarly fitted him for that honour.

Dr. Wallich was a Corresponding Member of the Royal Society of Liège. He was the author of "Notes on the Presence of Animal Life at Vast Depths in the Ocean" (1860), "The North Atlantic Sea-bed" (1862), and of numerous papers on the biology and distribution of the lower forms of animal and vegetable life. He contributed to the *Magazine of Natural History*, the *Quarterly Journal of Microscopical Science*, and various other scientific periodicals.

CAPTAIN ARTHUR OLDHAM HUBBART, I.M.S., on April 14th, at Cairo, aged 33 years. He joined the service in 1892 and was promoted Surgeon-Captain in 1895.

DEPUTY SURGEON-GENERAL GEORGE FARRELL, C.B., late I.M.S., at Dublin on April 28th, aged 68 years. He

served in the Afghan War of 1878-80, and in Burma in 1886-87, and retired in 1891.

HON. BRIGADE-SURGEON JOHN GORDON GRANT, A.M.S., retired, at Bath on April 19th. He joined the Army in 1857, became Surgeon in 1873, Surgeon-Major in the same year, and retired with the honorary rank of Brigade-Surgeon ten years subsequently. He served in the Egyptian War of 1882, and was present in the engagement at El Magfar, at the two actions of Kassassin, and at the battle of Tel-el-Kebir (medal with clasp and Khedive's star).

THE Madras papers announce the death, on the 5th ultimo, at the General Hospital, of Captain Dodd, of the Subordinate Indian Medical Service, at the age of fifty-three. The deceased was in medical charge of the Remount Depot at Hosur. He had been ailing from Bright's disease for some time, and was brought down and put under treatment at the General Hospital, Madras, where a carbuncle supervened, to which he succumbed. His remains were interred on Saturday morning in St. Mary's Cemetery with military honours.

SURGEON-CAPTAIN GREEN, a well-known inhabitant of Ootacamund, who was for many years connected with the Lawrence Asylum, died on Wednesday morning, the 19th ultimo, from pneumonia.

Gazette Notifications.

GOVERNMENT OF INDIA.

MILITARY.

Colonel B. FRANKLIN, C.I.E. (supernumerary), Indian Medical Service, Bengal, is absorbed in the administrative grade, with effect from the 17th January 1899, *vice* Colonel W. P. WARBURTON, M.D., retired.

Colonel NEWMAN, I.M.S., Lahore, will officiate as Principal Medical Officer in the Punjab, *vice* Surgeon-General SPENCER, who acts as Director-General of the Indian Medical Service, *vice* Surgeon-General HARVEY proceeding on leave.

Lieutenant-Colonel C. H. BEATSON, I.M.S., has been appointed Principal Medical Officer, Kohat-Kurram Force, *vice* Lieutenant-Colonel REID transferred to Nagpur as Administrative Medical Officer, Central Provinces.

Lieutenant-Colonel MURRAY, Civil Surgeon, Shahabad, reverts to military duty, and is posted to Rawalpindi.

Captain G. HUGHES, R.A.M.C., is placed under orders for India and posted to the Punjab Command.

Majors M. W. KERIN and C. T. BLACKWELL, R.A.M.C., are permitted to exchange places on the roster for Indian service.

The following is a list of the surgeons on probation nominated by the medical schools for the Royal Army Medical Corps:—IL. S. ANDERSON, Queen's College, Belfast; J. H. R. BOND, St. Mary's Hospital, London; L. N. LLOYD, Charing-cross Hospital; E. L. MUNN, Royal Infirmary, Edinburgh; S. V. H. UNDERHILL, St. George's Hospital, London; L. WOOD, Masson College, Birmingham; and E. P. CONSOLLY, Catholic University Medical School, Dublin.

The services of the following R.A.M.C. officers are lent for Plague duty:—Majors ROWAN and DEANE and Captain STRATHAN to Bengal, and of Major R. J. WINDLE, M.B.; Captain JACKSON and Lieutenant MARRIOTT to Bombay.

Captain E. S. PECK, M.B., I. M. S., to the medical charge of the 5th Bengal Infantry, *vice* Major U. N. MUKERJI, M.B.

Captain A. F. STEVENS, I. M. S., to the medical charge of the 18th Bengal Infantry, *vice* Captain R. H. MADDOX, M.B.

CIVIL.

The post of Assay-Master at the Calcutta Mint, vacant by the retirement of Lieutenant-Colonel SCULLY, I.M.S., on April 5th, is being filled temporarily by Captain LLOYD-JONES, though the vacancy goes to Major MILNE, Deputy Assay-Master, Bombay Mint. The latter officer, however, has been permitted, at his own request, to remain at Bombay in his present appointment. Lieutenant-Colonel MARTIN, Assay-Master, Bombay Mint, proceeds on a year's furlough on May 20th, and retires at the end of that period. His duties of the appointment next month.

leave, will return in Sept eventually be confirmed as I. M. S. from the date of Colonel MARTIN's retirement.

The services of Captain F. H. WATLING, M.B., C.M., I. M. S. (Bengal), are placed temporarily at the disposal of the Chief Commissioner of the Central Provinces.

The services of Captain E. A. R. NEWMAN, M.B., B.S., I.M.S. (Bengal), are placed temporarily at the disposal of the Government of Bengal, with effect from the 2nd April 1899.

Captain H. BURDEN, I. M. S. (Bengal), to be an Agency Surgeon of the 2nd class, and is posted as Assistant Agency Surgeon in Gilgit.

Captain H. E. DRAKE-BROCKMAN, I.M.S. (Bengal), to be an Agency Surgeon of the 2nd class.

Captain J. A. BLACK, I.M.S., on Special Plague duty at Ajmere, is appointed to hold charge of the office of Civil Surgeon of Ajmere and Medical Officer of the Merwara Battalion, in addition to his own duties, during the absence, on privilege leave, of Lieutenant-Colonel D'FRENCH MULLAN, Indian Medical Service.

LEAVE.

Lieutenant-Colonel S. J. THOMSON, C.I.E., I.M.S. (Bengal), Sanitary Surgeon of the 2nd class, Provinces and Oudh, is granted furlough out of India, on medical certificate.

Lieutenant-Colonel A. P. ONE, M.D., I.M.S. (Bengal), an Agency Surgeon of the 2nd class and Residency Surgeon in Kashmir, (m. c.) for one year.

Lieutenant-Colonel FULLERTON, I.M.S., Administrative Medical Officer, Baluchistan, is granted three months' privilege leave, and Major EDWARDS, I.M.S., Civil Surgeon of Quetta, in addition to his own duties.

Lieutenant-Colonel F. F. PERRY, F.R.C.S. (Bengal), Professor of Surgery in the Lahore Medical College, is granted furlough out of India for six months.

Major E. F. H. DOBSON, M.B., I.M.S. (Bengal), Officiating Medical Storekeeper to Government, Punjab Command, is granted two years' furlough out of India on private affairs.

RETIREMENT.

Colonel A. L. BROWNE, R.A.M.C., Officiating Principal Medical Officer, Belgium, has applied to retire.

Major BEATTY, R.A.M.C., in charge of the Station Hospital at Hyderabad, Sind, has applied for leave to retire from the service.

Colonel A. STEPHEN, I.M.S., is permitted to retire.

NICHOLAS MARTIN, M.D., I.M.S., Bengal, in charge No. 37, Native Field Hospital, to retire from the service, with effect from the 1st May 1899, subject to Her Majesty's approval.

Lieutenant-Colonel CLEMENT MALLINS, M.D., I.M.S., Madras, 1st Regiment of Lancers, Hyderabad Contingent, is permitted to retire from the service, with effect from the 1st May 1899, subject to Her Majesty's approval.

Major L. T. YOUNG, M.D., I.M.S., Bengal, Civil Surgeon, Umballa, has been transferred by the Secretary of State for India to temporary half-pay list, with effect from the 29th April 1899, subject to Her Majesty's approval.

BOMBAY.

Captain L. F. CHILDE, I.M.S., is allowed furlough on medical certificate for eight months from the 22nd April.

Lieutenant-Colonel W. K. HATCH, I.M.S., is allowed privilege leave of absence for two months from the 1st May 1899.

The services of Lieutenant-Colonel J. S. WILKINS, D.S.O., I.M.S., are replaced at the disposal of the Government of India.

Colonel J. M. BEANISH, R.A.M.C., to officiate on the Administrative Medical Staff of the Army, *vice* Surgeon-General W. S. M. PRICE, appointed to officiate as Principal Medical Officer, Bombay Command, dated 6th February 1899.

PUNJAB.

Captain J. C. LAMONT, M.B., I.M.S. (Bengal), Professor of Anatomy, Lahore Medical College, is granted furlough out of India for eight months.

Captain H. G. MELVILLE, M.B., C.B., I.M.S. (Bengal), is appointed to officiate as Professor of Anatomy, Lahore Medical College, during the absence on furlough of Captain J. C. LAMONT, M.B., I.M.S. (Bengal), or until further orders.

Captain C. H. JAMES, I.M.S., Civil Surgeon, Dharmasala, is posted to the Jullundur District, with effect from the afternoon of the 2nd April 1899, and assumed charge of his duties as Plague Medical Officer on the afternoon of the 5th of April 1899, relieving Captain H. SMITH, I.M.S., who continues on plague duty in the Jullundur District.

Captain W. H. W. ELLIOT, I.M.S., 2nd Battalion, 1st Gurkha Regiment, Dharmasala, is placed in charge of the Civil Medical duties of Dharmasala, in addition to his own, with effect from the afternoon of the 27th March 1899, *vice* Captain C. H. JAMES, I.M.S.

Captain W. R. CLARK, I.M.S., to officiate as Professor of Surgery at Lahore in place of Lieutenant-Colonel F. PERRY, who is taking six months' sick leave.

The services of Captains HEARD and LANE are lent to the Jail Department.

CENTRAL PROVINCES.

Colonel C. W. CARR-CALTHROP, M.D., I.M.S. (Bengal), is appointed to be Administrative Medical Officer and Sanitary Commissioner of the Central Provinces, with effect from the 2nd April 1899.

Lieutenant-Colonel SCOTT, D.S.O., I.M.S., Medical Officer to the Central Provinces, as soon as possible to take up his duties at Allahabad.

Privilege leave for three months is granted to Major J. L. POYNTER, I.M.S., Civil Surgeon, Raipur, with effect from the 15th instant, or the subsequent date on which he may be relieved of his duties.

Captain F. H. WATLING, M.B., C.M., I.M.S., whose services have been placed at the disposal of the Chief Commissioner by the Government of India in the Home Department, is appointed to officiate as Civil Surgeon, Betul.

Dr. B. N. MULLAN to be a special Medical Officer under the rules made under the Epidemic Diseases Act, 1897, and posted to Nagpur.

MADRAS.

Lieutenant-Colonel EMERSON, R.A.M.C., probably officiates as District Principal Medical Officer, Madras Command, when Colonel BARNET proceeds on leave home.

BENGAL.

Major A. W. D. LEAHY, I.M.S., has been granted a further extension of furlough for six months on medical certificate.

Major U. N. MOOKERJEE, I.M.S., Officiating Civil Surgeon of Nadia, is appointed to officiate as Civil Surgeon of Nadia.

ELL, I.M.S., Civil Surgeon of Champaran, now of Howrah, is appointed to be Civil Surgeon of Champaran, to continue to act at Howrah until further orders.

Lieutenant-Colonel F. R. SWAINE, I.M.S., Civil Surgeon of Ranchi, is appointed to be Civil Surgeon of Champaran.

Captain F. P. MAYNARD, I.M.S., Civil Surgeon of Bogra, now Officiating Civil Surgeon of Hazaribagh, is appointed to be Civil Surgeon of Ranchi, but will continue to act at Hazaribagh until further orders.

Major C. E. SUNDER, I.M.S., Civil Surgeon of Belgaon, now Officiating Civil Surgeon of Gaya, is appointed to be Civil Surgeon of Belgaon.

Captain C. R. STEVENS, I.M.S., is appointed to be Civil Surgeon of Bhagalpur, to continue to act at Bhagalpur until further orders.

Captain H. M. EARLE, I.M.S., Officiating Resident Medical Officer, Medical College Hospital, Calcutta, is confirmed in that appointment.

Captain R. H. MADDOX, I.M.S., Officiating Civil Surgeon of Saran, is appointed to be Deputy Sanitary Commissioner, Metropolitan and Eastern Bengal Circle, but will continue to act at Saran until further orders.

Captain E. E. WATERS, I.M.S., is appointed to act, until further orders, as Superintendent of the Presidency Jail, *vice* Mr. P. DONALDSON, about to retire.

Captain W. J. BUCHANAN, I.M.S., Superintendent of Bhagalpur Central Jail, is allowed leave for twelve weeks.

Captain C. R. STEVENS, I.M.S., Officiating Civil Surgeon of Bhagalpur, is appointed to act, in addition to his own duties, as Superintendent of the Bhagalpur Central Jail, during the absence, on leave, of Captain W. J. BUCHANAN, or until further orders.

Major K. NADING, R.A.M.C., in charge, Station Hospital, Dum Dum, is appointed to have charge of the civil medical duties at that station in addition to his own duties, with effect from the 29th December 1898.

N.-W. PROVINCES.

Colonel G. HUTCHESON, M.D., I.M.S. (Bengal), is appointed to be Inspector-General of Civil Hospitals, North-Western Provinces and Oudh, with effect from the 2nd April 1899.

Captain W. SELBY, I.M.S., whose services have been temporarily placed at the disposal of this Government, to Plague duty at Benares.

Captain T. W. FULLERTON, I.M.S., on Plague duty at Benares, to officiate as Deputy Sanitary Commissioner, I Circle.

Major J. M. CADELL, Officiating Deputy Sanitary Commissioner, I Circle, to be Civil Surgeon, Fyzabad.

Major R. W. WRIGHT, R.A.M.C., to the civil medical charge of Jhansi, in addition to his military duties, with effect from the date of taking charge, and during the absence, on leave, of Major L. G. FISCHER, I.M.S., or until further orders.

Captain C. B. PRATT, I.M.S., whose services have been placed temporarily at the disposal of this Government, to Plague duty at Azamgarh.

Lieutenant-Colonel J. MCCONAGHEY, I.M.S., Civil Surgeon, Lucknow, held visiting medical charge of Bara Banki, from 21st to 29th March 1899, inclusive, in addition to his own duties.

Captain J. CHAYTOR-WHITE, I.M.S., Officiating Deputy Sanitary Commissioner, to be confirmed in that appointment.

Lieutenant-Colonel J. ANDERSON, I.M.S., Civil Surgeon, whose services have been replaced at the disposal of this Government, to Agra.

Major J. F. MACLAREN, I.M.S., Civil Surgeon, from Ghazipur to Allahabad.

Captain G. T. BIRDWOOD, I.M.S., Officiating Civil Surgeon, from Banda to Ghazipur.

Major W. G. THOROLD officiates as Sanitary Commissioner, North-West Provinces, *vice* Lieut.-Colonel THOMSON, on furlough.

Captain W. COST, I.M.S., Civil Surgeon, Gonda, furlough out of India for 18 months.

Major R. R. WEIR, I.M.S., Superintendent, Central Prison, Farnukhabad, furlough out of India for seven months and seven days.

Major S. H. HENDERSON, I.M.S., Superintendent, Central Prison, Agra, furlough out of India for nine months.

BURMA.

Captain W. G. PRIDMORE, I.M.S., to the civil medical charge of the Katha district, *vice* Assistant-Surgeon F. X. D'ATTAIDES, proceeding on leave.

Mr. H. J. AUGUSTINE to be Civil Surgeon at Falam, in place of Assistant-Surgeon S. JACOB.

ASSAM.

Captain E. C. MACLEOD, I.M.S., Civil Surgeon, Lushai Hills, to Goalpara, and placed in civil medical charge of that district.

AN IMPROVISED STOMACH PUMP.

Dr. R. J. BURNS, of Sunderland, who was called to a man who had attempted suicide by swallowing rat poison, found himself in a dilemma owing to his not being provided with a stomach pump. Nothing daunted, he is reported to have passed a tube into the stomach of the patient, and to have sucked out the contents, thus saving his patient's life by this unpleasant operation at the risk of his own.

THERAPEUTICAL NOTES.

Creosote in Ozaena.—Ferrari, according to the *Riforma Medica* for January 10th, quoted in *New York Medical Journal*, recommends:

1. R. Creosote, } of each	... equal parts.
Glycerin, }	
And—	
2. R. Creosote ...	75 grains;
Alcohol at 70 per cent. ...	150 "
Glycerin ...	600 "

For application on alternate days. If necessary, the cure is completed with the galvano-cautery.

For Treatment of Recurrent Epistaxis.—According to the *Riforma Medica* for January 10th, Rendu recommends:

R. Antipyrine ...	7½ grains;
Tannin ...	15 "
Powdered Sugar ...	150 "

To be used locally.

An Application for Pruritus Ani.—We find the following formula in the *Riforma Medica* for March 13th:

R. Sodium hyposulphite ...	30 parts;
Carbolic acid ...	5 "
Glycerin ...	20 "
Distilled water ...	450 "

M. To be applied on compresses.

For Eczema of the Anus.—Brocq's formula is given as follows in the *Riforma Medica* for March 13th:

R. Rasped camphor ...	2 parts;
Zinc oxide, } each	30 "
Bismuth subnitrate, }	
Powdered tale ...	10 "

M.

IMPERIAL BACTERIOLOGICAL LABORATORY.

A considerable advance was made during the past year towards completing the equipment of the bacteriological laboratory at Muktesar and placing the staff on a thoroughly satisfactory footing. As the result of an informal conference held at Simla, which was attended by Veterinary-Colonel Queripel and Dr. Lingard, a Veterinary Officer has been posted as Assistant to the Imperial Bacteriologist to attend to the practical work outside the laboratory, as well as to assist in the laboratory itself. A trained German head laboratory assistant has been attached to the laboratory, and most of the buildings and appliances required have been provided. Government have unfortunately been deprived temporarily of Dr. Lingard's services, owing to his being obliged to take sick leave, but Captain Leonard Rogers, I.M.S., has been appointed to carry on his work, and a number of important experiments are in progress in connection with rinderpest, whilst the manufacture of mallein and other reagents is being carried on. It is a source of satisfaction to Government that the laboratory is at length in working order and the various objects of the institution are being actively pursued.

Operations under the Glanders and Farcy Act have been extended during the year. In particular the Act was amended in order to meet the paucity of qualified Veterinary Practitioners in the North-Western Provinces and Oudh by utilizing, with the express permission of the military authorities, the services of Veterinary Officers of the Army Veterinary Department in cases of urgent necessity. Rules have been framed for the working of the Act in the Hyderabad Assigned Districts, and the difficulty caused by the absence of any qualified Veterinary Practitioner has been met by the appointment as Veterinary Surgeon, under section 7 of the Act, of the Superintendent, Civil Veterinary Department, or, in his absence, of the Senior Veterinary Assistant. Glanders was prevalent in most of the Provinces, but not to any serious extent, except in Bombay City. Further information has been collected regarding *sera* disease, which shows how widespread this fatal malady is. So far inquiries have been confined to the Punjab and the North-Western Provinces, and investigations should be directed to ascertaining whether the disease affects animals elsewhere in the Indian Peninsula, and, if so, to what extent. It is to be regretted that no progress has been made in investigating the Ludhiana disease or anthrax. The Imperial Bacteriologist may possibly be able to undertake this duty in the near future.

IMPROVED PUNKHAS.

PUNKHAS are so essential to the comfort and welfare of the resident in India during the hot weather that it is little wonder that there exists a considerable amount of literature on the subject. No one, however, has to our knowledge, remarks the *Indian Daily Telegraph*, made a scientific investigation of the swinging punkah, with the exception of Mr. John Wallace, officiating Principal of the School of Art, Bombay. Mr. Wallace properly points out that the efficiency of a given punkah can only be measured by the volume of air that is agitated below the punkah. Many punkhas are made so heavy, and are suspended by such long cords, that it is quite impossible for the ordinary coolie to move them with sufficient velocity. Fringes should be light and flexible, so that they may belly out like the sails of a ship and "catch" the air. To secure this end, fringes are best made of a long straight piece of longcloth, with a hem about one inch deep at the bottom. Into the hem a long bagful of No. 10 shot should be introduced, the thickness of the bag when full of shot being about half an inch. The fringe should be evenly attached to the punkah, which should not be too massive

Round bar iron 1½ inch in diameter, covered with leather or leather cloth, makes a very effective swing bar. Mr. Wallace adds that if this bar is hung by 3-inch iron rings on the suspending hooks, the rubbing is transformed into a rolling motion, and no unpleasant creaking is produced. Punkhas thus made with fringes about 28 inches deep will be found to produce a very effective current of air, and by employing silk instead of longcloth the punkahs may be made very ornamental.

BEER IN TABLETS.

THERE is nothing very surprising about the statement that in a short time beer will be on sale in the form of tablets. In Germany the beverage has been reduced to a powder by a process of evaporation, and a very small quantity of the powder is needed, with the addition of water and carbonic acid gas, to make a foaming tankard of ale just as good as if it were freshly drawn from the barrel. As the *Munchener Evening News* suggests, it is just possible that this new departure may ultimately have very important effects on the brewing and bottling trades, inasmuch as it will no longer be necessary to transport barrels and bottles. Solid beer yields another example of the strangeness of truth as compared with fiction. An Arctic explorer used to be fond of telling how, up in the Far North, the ship's beer froze and how it was necessary to break it up with crowbars, and then suck the pieces.

POISONOUS PEAS.

ONE result of the famine in the Central Provinces was that a number of people entering the poor houses were found to be affected with "paraplegia" in a more or less degree from having lived almost entirely on "kesooni" or "teori," a form of dhall that grows wild in several districts. Under treatment some of these cases improved, but a number of them were apparently paralysed for life.

DESTRUCTION OF TOWN REFUSE.

LORD KELVIN has just reported on some interesting investigations made by Professor Archibald Barr and himself in Edinburgh, Bradford, and Oldham, on the subject of the destruction of town refuse. The Report is of great interest to local authorities and the general public. In one instance, he experimented on damp asphalt refuse containing a large proportion of vegetable matter from markets and shops. This was consumed without the slightest trace of smoke. In addition to the solution of the smoke difficulty, the residual products proved to be of great commercial value. In another case, the steam produced by the process of destruction was utilised for the driving of electric lighting machinery and other power purposes. No coal or coke whatever was employed, and in this instance also there was an entire absence of smoke.

Notice.

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BOOKS, REPORTS, &c., RECEIVED.

On Fractures and Dislocations. By Dr. H. Helferich; translated by J. Hutchinson, Junior, New Sydenham Society's Vol. Ch. XVII. London: H. R. Lewis, 1899.

Pellagra in Egypt. By F. M. Sandwith, M.D., M.R.C.P., London, 1899.

Essentials of Modern Treatment of Disease. By K. M. Nadkurni, Part II, Madras, 1899.

Bengal Journal of Health and Sanitation. The Urethra and the Bladder. By M. Tuchmann, M.R.C.S. Eng. London: H. K. Lewis, 1899. Pp. 56, 8vo. Price 6s.

Annual Report, Sanitary Commissioner with Government of India for 1897.

Annual Report on Lunatic Asylums in Bengal for 1898.

COMMUNICATIONS RECEIVED FROM:—

Major J. L. Poynder, Raipur, C. P.; Captain F. Maynard, Hazaribagh; Herr Barth, Leipzig; Dr. E. Liveing, London; Dr. D. D. Gupta, Calcutta; Colonel K. McLeod, London; Dr. K. Dass, Calcutta; Sanitary Commissioners, Madras and Bengal; Captain L. Rogers, Muktesar; Asst.-Surgeon H. Sen, Puri; Dr. J. F. Little, London; Secretary to Grant, Madras; Captain W. J. Buchanan, Darjeeling; Secretary to The Sanitary Commissioner with the Govt. of India, Simla; Dr. W. Pike, London; Major, G. Giles, London; Surgeon-General R. Harvey, C.B., D.S.O., Simla.

Original Articles.

EXTERMINATION OF MALARIA.

By

R. ROSS, M.R.C.S., D.P.H.,

MAJOR, I.M.S.

It has been shown in my reports that the parasites of malaria pass a stage of their existence in certain species of mosquitos, by the bites of which they are inoculated into the blood of healthy men and birds. These observations have solved the problem—previously thought insolvable—of the mode of life of these parasites in external nature.

My results have been accepted by Dr. Laveran, the discoverer, of the parasites of malaria; by Dr. Manson, who elaborated the mosquito theory of malaria; by Dr. Nuttall of the Hygienic Institute of Berlin, who has made a special study of the relations between insects and disease; and, I understand, by M. Metchinkoff, Director of the Laboratory of the Pasteur Institute in Paris. Lately, moreover, Dr. C. W. Daniels of the Malaria Commission, who has been sent to study with me in Calcutta, has confirmed my observations in a special report to the Royal Society; while, lastly, Professor Grassi and Drs. Bignami and Bastianelli of Rome have been able, after receiving specimens and copies of my reports from me, to repeat my experiments in detail, and to follow two of the parasites of human malaria through all their stages in a species of mosquito called the *Anopheles Claviger*.

It may, therefore, be finally accepted as a fact that malaria is communicated by the bites of some species of mosquito; and, to judge from the general laws governing the development of parasitic animals, such as the parasites of malaria, this is very probably the only way in which infection is acquired, in which opinion several distinguished men of science concur with me. In considering this statement it is necessary to remember that it does not refer to the mere recurrences of fever to which people previously infected are often subject as the result of chill, fatigue, and so on. When I say that malaria is communicated by the bites of mosquitos, I allude only to the original infection.

It is also necessary to guard against assertions to the effect that malaria is prevalent where mosquitos and gnats do not exist. In my experience, when the facts come to be enquired into, such assertions are found to be untrue. Scientific research has now yielded so absolute a proof of the mosquito theory of malaria that hearsay

evidence opposed to it can no longer carry any weight.

Hence it follows that, in order to eliminate malaria wholly or partly from a given locality, it is necessary only to exterminate the various species of insect which carry the infection. This will certainly remove the malaria to a large extent and will almost certainly remove it altogether. It remains only to consider whether such a measure is practicable.

Theoretically the extermination of mosquitos is a very simple matter. These insects are always hatched from aquatic larvæ or grubs which can live only in small stagnant collections of water, such as pots and tubs of water, garden cisterns, wells, ditches and drains, small ponds, half-dried water-courses, and temporary pools of rain-water. So far as I have yet observed the larvæ are seldom to be found in larger bodies of water, such as tanks, rice-fields, streams and rivers, and lakes, because in such places they are devoured by minnows and other small fish. Nor have I ever seen any evidence in favour of the popular view that they breed in damp grass, dead leaves, and so on.

Hence, in order to get rid of these insects from a locality, it will suffice to empty out or drain away or treat with certain chemicals the small collections of water in which their larvæ must pass their existence.

But the practicability of this will depend on circumstances—especially, I think, on the species of mosquito with which we wish to deal. In my experience, different species select different habitations for their larvæ. Thus the common “brindled mosquitos” breed almost entirely in pots and tubs of water; the common “grey mosquitos” only in cisterns, ditches and drains; while the rarer “spotted-winged mosquitos” seem to choose only shallow rain-water puddles and ponds too large to dry up under a week or more, and too small or too foul and stagnant for minnows.

Hence the larvæ of the first two varieties are found in large numbers round almost all human dwellings in India; and, because their breeding grounds—namely, vessels of water, drains and wells—are so numerous and are so frequently contained in private tenements, it will be almost impossible to exterminate them on a large scale.

On the other hand, spotted-winged mosquitos are generally much more rare than the other two varieties. They do not appear to breed in wells, cisterns and vessels of water, and therefore have no special connection with human habitations. In fact, it is usually a matter of some difficulty to obtain their larvæ. Small pools of any permanence—such as they require—are not common in most parts of India except during the rains, and then pools of this kind are generally full of minnows which make short work of any mosquito larvæ they may find. In other words, the breed-

ing grounds of the spotted-winged varieties seem to be so isolated and small that I think it may be possible to exterminate this species under certain circumstances.

The importance of these observations will be apparent when I add that hitherto the parasites of human malaria have been found only in spotted-winged mosquitos—namely, in two species of them in India and in one species in Italy. As the result of very numerous experiments, I think that the common brindled and grey mosquitos are quite innocuous as regards human malaria—a fortunate circumstance for the human race in the tropics. And Professor Grassi seems to have come to the same conclusion as the result of his enquiries in Italy.

But I wish to be understood as writing with all due caution on these points. Up to the present our knowledge, both as regards the habits of the various species of mosquito and as regards the capacity of each for carrying malaria is not complete. All I can now say is that if my anticipations be realised—if it be found that the malaria-bearing species of mosquito multiply only in small isolated collections of water which can easily be dissipated—we shall possess a simple mode of eliminating malaria from certain localities.

I limit this statement to certain localities only because it is obvious that where the breeding pools are very numerous, as in water-logged country, or where the inhabitants are not sufficiently advanced to take the necessary precautions, we can scarcely expect the recent observations to be of much use—at least for some years to come. And this limitation must, I fear, exclude most of the rural areas in India.

Where, however, the breeding pools are not very numerous, and where there is anything approaching a competent sanitary establishment, we may, I think, hope to reap the benefit of these discoveries. And this should apply to the most crowded areas, such as those of cities, towns and cantonments, and also to tea, coffee, and indigo estates, and perhaps to military camps.

For instance, malaria causes an enormous amount of sickness among the poor in most Indian cities. Here the common species of mosquitos breed in the precincts of almost all the houses, and can therefore scarcely be exterminated; but pools suitable for the spotted-winged varieties are comparatively scarce, being found only on vacant areas, ill-kept gardens, or beside roads, in very exceptional positions where they can neither dry up quickly nor contain fish. Thus a single small puddle may supply the dangerous mosquitos to several square miles containing a crowded population: if this be detected and drained off—which will generally cost only a very few rupees—we may expect malaria to vanish from that particular area.

The same considerations will apply to military cantonments and estates under cultivation. In

many such malaria causes the bulk of the sickness and may often, I think, originate from two or three small puddles of a few square yards in size. Thus in a malarious part of the cantonment of Secunderabad, I found the larvæ of spotted-winged mosquitos only after a long search in a single little pool which could be filled up with a few cart-loads of town rubbish.

In making these suggestions I do not wish to excite hopes which may ultimately prove to have been unfounded. We do not yet know all the dangerous species of mosquito, nor do we even possess an exhaustive knowledge of the haunts and habits of any one variety. I wish merely to indicate what, so far as I can see at present, may become a very simple means of eradicating malaria.

One thing may be said for certain. Where previously we have been unable to point out the exact origin of the malaria in a locality and have thought that it rises from the soil generally, we may now hope for much more precise knowledge regarding its source; and it will be contrary to experience if human ingenuity does not finally succeed in turning such information to practical account.

More than this, if the distinguishing characteristics of the malaria-bearing mosquitos are sufficiently marked (if, for instance, they all have spotted wings), people forced to live or travel in malarious districts will ultimately come to recognise them and to take precautions against being bitten by them.

Before practical results can be reasonably looked for, however, we must find precisely—

(a) What species of Indian mosquitos do and do not carry human malaria?

(b) What are the habits of the dangerous varieties?

I hope, therefore, that I may be permitted to urge the desirability of carrying out this research. It will no longer present any scientific difficulties, as only the methods already successfully adopted will be required. The results obtained will be quite unequivocal and definite.

But the enquiry should be exhaustive. It will not suffice to distinguish merely one or two malaria-bearing species of mosquito in one or two localities; we should learn to know all of them in all parts of the country.

The investigation will be abbreviated if the dangerous species be found to belong only to one class of mosquito, as I think is likely; and the researches which are now being energetically entered upon in Germany, Italy, America and Africa which assist any which may be undertaken in India, though there is reason for thinking that the malaria-bearing species differ in various countries.

As each species is detected, it will be possible to attempt measures at once for its extermination in given localities as an experiment.

INFECTIOUSNESS OF MALARIAL FEVER AND KALA-AZAR.*

By

R. ROSS, M.R.C.S., D.P.H.,

MAJOR, I.M.S.

It is generally thought that malarial fever is due to a poison generated in the soil, air, or water of certain localities, thence termed malarious, and that the disease is not communicable, directly or indirectly, from the sick to the healthy.

On the other hand, *Kala-azar*, the epidemic communicable fever of Assam, is not connected with any one locality, and it is communicable from the sick to the healthy. Hence, it is said, *Kala-azar* cannot be malarial fever.

The proof that *Kala-azar* is a spreading disease is, I consider, quite sufficiently established, namely, that it has actually spread up the Brahmaputra Valley from the Garo Hills to the Nowgong District and beyond. This fact is attested by official statistics and by the statements of everyone who knows the locality.

As Sir W. R. Kinsey, however, said at the discussion of the subject before the Royal Medical and Chirurgical Society [11, p. 820], it is difficult to prove the communicability of diseases which simultaneously affect a number of people. It is proved in this case, by the facts everywhere recognised, that *Kala-azar* tends to confine itself to isolated villages, families and houses, and that it has frequently appeared in such after the entry of an affected person.

Had the disease spread by the extension of some meteorological condition, it would have broken out everywhere at once; had it spread by means of some morbid influence slowly extending itself in the elements of external nature, it would not have moved by families and affected persons. If we accept the universal experience on the subject, which I think we are bound to do, we must also accept that the disease is a communicable one.

It is possible that (ordinary) malarial fever is capable of becoming epidemic and of being communicated from the sick to the healthy.

What can be said definitely in favour of it? Three things:—

(1) Paludism is a parasitic disease. Parasites must propagate themselves; and it would, therefore, appear to be necessary for them to pass from host to host. All parasites which have as yet been sufficiently studied do so. Are the parasites of human malaria to be exceptional?

(2) Malaria of birds (proteosoma) is communicable from sick to healthy sparrows through the mosquito. Every step in this evolution necessary to the enquiry has been studied under the microscope, and numerous birds have been actually infected.

(3) Some steps in the similar evolution of one or perhaps two, of the human parasites have been made out; but the life-history has not been completed.

Proteosoma of birds is communicable. Owing to the great similarity between the avian and human parasites, and to the fact that research in regard to the latter has already yielded results identical to a certain distance with those obtained in respect to the former, it becomes almost impossible to avoid a like conclusion for paludism.

In making this statement I do not wish to be misunderstood. The disease cannot be directly communicable like scabies or venereal disease; but rather indirectly like rabies, filariasis, Texas cattle-fever, or nagana. Accepting the analogy with proteosoma, communication will require that the proper species of mosquito, or perhaps other insect, be present, and also that the particular insect has lived for a week or more, after biting the subject, before it can infect the object. Now, mosquitos have many enemies—spiders, bats, strong winds, while, so far as I can ascertain, the species of insect which commonly infest our houses in India, and the larvæ of which live in pots of water, garden cisterns, and so on, cannot carry human malaria. Hence it follows that very particular conditions must be present before communication can be established.

Such conditions are not likely to exist to any great extent in our hospitals and in the houses of Europeans. In the Nowgong District, however, the houses of the poor are placed in the most favourable situation in this respect. Situated on the ground, surrounded by pools of stagnant water, and made generally of open matting work, they permit the ingress of hordes of mosquitos of numerous species which, day and night, bite the half-naked bodies of the inmates, and when gorged, sleep in the dark, damp corners of the roof, returning after digestion for another meal, and living on in the same house probably for weeks and perhaps even months.

It will be perceived that a mosquito of the proper species existing in such a situation may carry the infection from any sick person who has entered the house to many of the other inmates in turn; and that, moreover, as suggested in paragraph 30, most of the insects there may shortly become infected and may repeat the dose of malaria nightly to the unfortunate inhabitants until all suffer from a frightful condition of parasitism. Still further, many of the infected insects may escape to neighbouring houses and afflict the occupants of these in a similar manner. Finally, when a patient so attacked removes to another village or hamlet where the mosquitos of the proper species exist, he will start an epidemic of the same nature.

The Nature of Kala-azar.—At first it seems to have been assumed that *Kala-azar* is

* Abstracted from Report, dated 30th January 1899.

malarial; when, however, the fact of its communicability became more and more apparent, doubt began to be expressed on this head, and Dr. Giles was directed to investigate the matter. He came to the conclusion that the disease is ankylostomiasis, or rather perhaps "a mixed anæmia brought about by ankylostomiasis acting on a population worn down by chronic malarial poisoning" [10], and explained the communicability of the disease very satisfactorily by his brilliant researches on the life-history of the ankylostomum.

For a short period after the publication of Giles's report the medical profession in Assam appear to have accepted his views; by degrees, however, to judge from the literature in the Annual Sanitary Reports, when the profession began to acquire greater familiarity with the disease, and when, especially, Dobson published his paper [15] on the wide prevalence of the ankylostomum among coolies imported into Assam, Giles's conclusions were objected to by many. Accordingly, another medical officer, Captain Rogers, was deputed to reopen the subject. He arrived at the conclusion that *Kala-azar* is not ankylostomiasis, but malarial fever. His results were, however, questioned by Giles [7], Thornhill [9], and others [8, 14]. To these criticisms he replied at length [12].

It should be mentioned here that Captain Harold Brown has lately reported on a disease called *Kala-dukh*, now prevalent in the Purnea District of Bengal [16]; and that I have independently become acquainted with a disease in the adjoining Darjeeling District, called indifferently *Kala-dukh* or *Kala-jwar*.

The facts appear to me to be as follows:—

1. *Kala-azar* is an epidemic and communicable disease.

2. Its symptoms are very like those of malarial fever. In established, i.e., fairly advanced cases, the disease consists principally of considerable enlargement of the spleen and liver, accompanied generally by a low fever, a certain degree of anæmia, and other secondary symptoms. The history of such cases is always that the illness commenced with high fever, generally with repeated rigors; and that the organs began to enlarge after this fever has lasted some time.

3. The death-rate is high; but recovery often occurs.

4. The disease is known to exist only in malarious localities.

5. In Nowgong, Assam side by side with the cases of established *Kala-azar*, there were numerous cases of typical early malarial fever, in which the malarial parasites were found in abundance and which already showed commencing and rapidly increasing enlargement of the liver and spleen. There were also cases of a later stage of malarial fever, in which the organs were more enlarged and a few parasites were found;

or in some of which, if no parasites could be detected, melauin could be obtained from the spleen.

6. In cases of established *Kala-azar* at Nowgong, the parasites of malaria were found in a few of the more recent ones, and melanin alone in the organs of a few more; but in many, including some autopsies, no parasites and no melanin at all could be detected. In most of the last, both enlargement of the organs and low fever were present. Yellow pigment was found in a large number of the cases.

The 75 cases examined by me (of which details are given) may be divided into two groups at the four months' limit. There were 42 cases of less than four months' duration; malarial parasites were found in 26 (62%) of these, while melanin alone was found in three more. There were 33 cases of more than four months' duration; parasites were found in only four (12%), and melanin alone in ten more. Hence, putting the parasites and melanin together (the latter being as clear evidence of malaria as the former), we find that either one or the other was detected in 69% of the cases of less than four months' duration; and in 42% of those of more than four months' duration. It is evident that, taking all the cases together, there was an increasing difficulty in finding the parasites as the case advanced in duration.

Out of the total 75 cases, parasites were found in 30 or 40%; melanin alone in 13, or 17.3%; and either parasites or melanin in 43, or 57%.

Six of the cases were considered to be possibly *Kala-azar*. These were 18, 19, 20, and 22, all of the same family, of which the first three contained quartan parasites; also 23, which contained both mild, tertian and festivo-autumnal parasites; and 27, which contained both black and yellow pigments.

Twenty-six of the cases were definitely diagnosed as *Kala-azar*—exclusive of the three recovered cases. They were cases 34, 39, 41, 43-48, 54-63 and 69-75. Parasites were found only in three, namely, 43 (festivo-autumnal quotidian), (44 festivo-autumnal tertian), and 75 (festivo-autumnal). But in the last the parasitic invasion appears to have been an epiphenomenon. Melanin was detected in nine more, namely, 34, 41, 45, 57, 58, 69, 70, 73 and 74. Yellow pigment was found in eleven, namely, 34, 45, 48, 58, 61, 69, 73 and 75; occurring alone by itself in 48, 61, 71 and 72. Nothing whatever was found in ten of the cases, namely, 39, 46, 47, 54, 55, 56, 59, 60, 62 and 63; but in cases 39, 46 and 60, the blood from the organs was not examined; while in none were autopsies performed. In all the seven autopsies on *Kala-azar* cases either black or yellow pigment was observed.

The cases of *Kala-azar* in which no melanin was detected after what I consider pretty thorough examination, were cases 47 and 56 (spleen only examined); 48, 61 and 62 (both spleen and liver examined); and 71 and 72 (autopsies). To these should be added case 75 (autopsy), in which the melanin belonged to a recent parasitic invasion possibly unconnected with the previous morbid condition. Hence we may, I think, conclude that eight out of the 26 *Kala-azar* cases contained no melanin, or melanin in such small quantities as to be inappreciable.

Thus, inclusive of case 75, parasites or melanin were found in twelve of the 26 *Kala-azar* cases, or in 46%. Neither were found after pretty careful search in seven, or 27%. Of the remainder, 27%, parasites were found in none, but melanin was not exhaustively searched for.

Out of the nine *Kala-azar* in-patients, the eggs of ankylostomes were detected in cases 57, 58, 59, 61, 63; and out of the seven *Kala-azar* autopsies, ankylostomes were found in all but case 75. Thus, the worms were present in 11 out of the 16 cases, or 69%.

In addition I have already mentioned that I examined 34 cases of sickness at Naxalbari in the Darjeeling Terai.

Of these 14 were said to be cases of *Kala-jwar*. I could distinguish no marked clinical difference between the *Kala-jwar* cases and 18 of the rest, which were said to be ordinary fever. The blood of all alike was examined; generally only once, as the patients came to me mostly from a distance; but sometimes on two or three occasions.

It is unnecessary to give the cases in detail. They were of varying periods of duration from three days to two years. Parasites were found only in five, or 15 per cent. of them, and only in recent cases. The forms observed were as follows:—Two *æstivo-autumnal* cases, without crescents, one of three days, and the other of six weeks' duration; two cases of mild tertian of one or two months' duration, the pigment in the parasites being very fine and brown; one case of quartan, of three months' duration.

These cases were practically the most recent ones examined; only one of them (a tertian case) had a spleen enlarged more than an inch or so below the ribs.

In the older cases the organs were more enlarged, and no parasites were observed.

No crescents at all were seen, which is just the opposite of Brown's experience with *Kala-duk*.

The hepatic and splenic bloods were not examined.

The motions were studied when procurable, and ova of round-worms, whip-worms and ankylostomes found, as usual, in a certain percentage.

The cases were similar in every respect to those examined at Nowgong, except, perhaps, that the liver was not so much affected. They were also similar to a few cases of *Kala-azar* shown to me by Dr. Lavertine and Dr. Price near Nowgong.

I have studied the parasites of malaria during the last four years in many parts of this country; especially Secunderabad, Bangalore, the Sigur Ghât near Ootacamund, Kherwara in Rajputana, the Darjeeling Terai, and Nowgong—also a few cases at Bombay, Poona, Madras and Calcutta.

I have generally experienced the greatest ease in detecting them in one or two examinations in recent cases in which recovery has not taken place; as, however, the cases advance in duration, especially when the organs have enlarged considerably, there is an increasing difficulty in finding them.

I studied many hundreds of attacks in my regiment, the 19th Madras Infantry, at Begumpett, Secunderabad. The men came to hospital directly they were taken ill, and the parasites were generally detected in the first few fields. It was remarkable that, though the men suffered very frequently from such attacks, there were only two or three cases of enlarged spleen in the whole regiment, which was examined by me expressly for the purpose. In one of these cases there was a daily rise of temperature continuing for weeks; it was not checked even by large doses of quinine, and parasites were never found in the blood; in short, it was exactly like the low fever observed at Nowgong. As it was the first case of such a fever studied by me, I was particularly struck by it.

In Bangalore, from 1895 to 1897, I saw several similar cases and called them "spleen fever." Numerous cases of the kind were observed in the Sigur Ghât and the Darjeeling Terai.

The species of parasites found by me in India accord almost exactly in morphological details with those described by the Italians. They were:—

(1) The so-called *æstivo-autumnal* parasites, distinguished by the appearance of only the younger forms in the peripheral blood during the first days of the illness and later, by the formation of crescents in a large percentage of cases. I think that there are at least two varieties of this parasite, one with a tertian and one with a quotidian period. In some localities crescents appear to be found more constantly and in greater numbers than in other localities (see paragraph 31, note).

I have paid very close attention to these forms in connection with the mosquito theory, and may add definitely that they are often not to be found at all in the older cases after a second or third exacerbation—though I have seen them suddenly appear again after a long interval.

(2) The *mild tertian* parasites, characterised roughly by a very active amœba found only in the larger corpuscles as a rule, and by the flagellate forms springing not from crescents, but directly from spherical elements. I think there are at least two species in India—one characterised by an excessively fine brown pigment, the other by a fine black pigment.

(3) The *quartan* parasite, characterised by a sluggish amœba, occupying a normal or perhaps small corpuscle and containing coarse black pigment, and flagellate bodies like those of mild tertian.

I am inclined to think that these diverse forms constitute not only quite different species but different genera—each genus including different species which vary in their effects on the human host, and which possibly require different species of insect for their definitive hosts. This, however, is of course a mere hypothesis—see paragraph 31.

It appears to be inadvisable to attempt any scientific nomenclature for these parasites until their development in the definitive hosts has been accurately studied; hence, I employ the names now in general use.

As regards my observations of the clinical features of cases of enlarged liver and spleen in various parts of India, I must say without hesitation that cases exactly similar to the worst ones of *Kala-azar* at Nowgong have been observed by me during the whole of my service in India and Burma. In other words, isolated cases of a disease clinically indistinguishable from *Kala-azar* appear to exist throughout the country; and in some localities, such as the Sigur Ghât and the Darjeeling Terai, are to be found in large numbers.

Some observations of mine on the parasites of malaria in India have already been published [18, 23].

The only peculiarities worthy of note in regard to the parasites found at Nowgong in Assam were the following:—

In the *æstivo-autumnal* parasites, I frequently observed that small amœbæ when quiescent exhibited one long pseudopodium which remained projecting when the other pseudopodia had been withdrawn—the amœbæ with "tongues." This recalls the observations of Marchoux in the paludism of Senegal [22]. Crescents were very scanty and frequently failed to follow the invasion by the fever-producing forms (possible owing to quinine). As a matter of fact, they were seen only in three cases and then in very small numbers.

The *tertian* parasites always had very fine, brown pigment.

The *quartan* parasites were often contained in small, dark-green corpuscles, recalling the "old-gold" corpuscles. In one case (10) many more sporulating forms were observed in the spleen than in the peripheral blood—which is unusual in quartan. Some of the quartan cases were very severe and showed great enlargement of the organs.

In three *æstivo-autumnal* cases, I observed in blood from the spleen what appeared at first sight to be simple red corpuscles containing each one or two large rounded grains of typical melanin. On close observation, however, it was seen that these corpuscles showed very active amœboid contractions, especially round the periphery, with a continually changing internal cloudiness. Unfortunately, these forms were so rare that I failed in staining them; but I concluded that the corpuscles contained parasites with a very indefinite outline. They were very like Marchiafava and Bignami's drawings of the mature tertian *æstivo-autumnal* parasites [24]; but the body of the parasite was still less distinct. Case 23 contained also some mild tertian parasites and an impig-

mented amoebula of the aestivo-autumnal variety. Case 43 contained, as well as these peculiar forms, some large sporulating elements recalling those of aestivo-autumnal tertian. Case 23 had great enlargement of the organs and came from a *Kala-azar* stricken village. Case 43 was definitely pronounced at the hospital to be *Kala-azar*.

These forms, and the quartan parasites in dark-green corpuscles, were the only elements which I do not remember to have seen elsewhere, and which have not been previously described (so far as I know).

As mentioned, parasites were found in only three out of the 26 *Kala-azar* cases, and were all aestivo-autumnal; but quartan parasites were found in three of the suspected cases, and aestivo-autumnal together with mild tertian in another.

7. Kelsch and Kiener state that melanin is often absent in cases which they describe as malarial fever, a few months after the beginning of the illness. Daniels states that in British Guiana the majority of enlarged spleens contain no melanin. Vandyke Carter and Kelsch and Kiener describe a secondary fever, not due to the parasites, connected with malarial fever; and Daniels notes the existence of a similar fever in cases of enlarged spleen, even in cases when the enlarged spleen contained no melanin.

The literature on these parasites in India is contained chiefly in papers by Vandyke Carter [29], Crombie [30, 31], Maynard [32], Rogers [33], Murray [34], Sturmer [35], and myself [18, 23]. Those papers are mostly concerned with the parasites themselves, and I can find in them no very apt references to the present matter—except one in the admirable essay of Vandyke Carter, to be quoted presently. Maynard, however, gives a table of 70 cases with very exact details, from which I collect that he found no parasites in advanced cases of paludism. The passage which I refer to in Vandyke Carter's work [p. 163] is headed "Secondary Fever," and is so important that it should be quoted *in extenso*. It is as follows:—

"Secondary fever.—The spirillar investigation (Work, pp. 171 and 420) led me to recognise pyrexial states following closely on the specific, and similar enough to admit of confusion, which are yet distinct in not presenting the same visible blood infection; and I considered such consecutive, residual or sequela pyrexia to be the effect of secondary quasi-septic contamination, or possibly of a reaction of the nervous system. Demonstrated so far for the typical spirillar, secondary events of this kind may be usual in other infections; and in the malarial, they appear to be represented by the so-called amphibolic stage of ague, long since noted by Wunderlich and his English commentators. At the native hospitals here, confirmed malarious subjects are seen presenting smart yet not distressing febrile paroxysms, samples of which, in my hands, seemed unattended with pigmented blood organisms, and, therefore, were regarded as of such secondary character; care being, however, needed to distinguish them from negative intercurrent paroxysms in the visibly infected. How far the more prolonged fever of equally idiopathic aspect which is often seen in malarious subjects can be viewed as of this secondary or sequela character remains for the present undecided; the spleen may be moderately involved, but the blood contains no pigment organisms; and quinine has no peculiar efficacy; signs of enteric fever are absent. This class of cases represents one form of the so-called 'malarial remittents,' which amongst natives take the place of 'continued fevers,' so termed in rather antiquated phrase; and, upon review, the data at my disposal indicate that in such cases the absence of visible dotted parasites is not warrant enough to negative an

antecedent connection, at least, with genuine malarial infections."

It is known that Vandyke Carter took up the study of the parasites at a very early stage in the history of our knowledge of them, and that there are passages in his essay which justify us in thinking that he overlooked, apparently purposely, the unpigmented amoebulae of the aestivo-autumnal varieties. Nevertheless, in the "confirmed malarious subjects," to which he seems specially to refer, these varieties should yield the large and grossly pigmented crescents which Carter would certainly never have overlooked; while the other varieties are of course always pigmented. Hence, I think we may admit that he did observe a secondary fever in confirmed malarious subjects in which the parasites were not to be found. I invite attention to every term of this remarkable passage, which is quite worthy of the most distinguished of our Indian observers.

And fortunately, although I have been able to cull few observations pertinent to this discussion from literature based on the parasitic theorem, I can cite some very striking passages from a work of an older school. The work I refer to is perhaps the best exposition of the pathological anatomy of paludism which we possess. Perhaps all the better for my present purpose, it proceeds not on the *point d'appui* of the parasites, but upon that of their immediate derivative the black pigment, and on that of the yellow pigment. The authors, practising in a country, Algeria, where, as in India, the chronic cases of malarial fever are almost as numerous and quite as considerable as the early attacks, give as minute attention to the former as they do to the latter; and every statement of theirs is accepted as bearing the highest authority. I refer to the classical work of Kelsch and Kiener [36].

Kelsch and Kiener begin by the following definitions:—

"Le poison palustre est un agent essentiellement destructeur des globules sanguins."

They divide the resulting disease practically into three periods—the acute, the chronic, and the cachexial.

In studying the acute stage (*intoxication paludéenne aigue*) they begin with a description of the pathological anatomy and histology, and give a long disquisition on the black and yellow pigments respectively. They then describe the clinical symptoms and deal particularly with the various forms and incidents, the simple, bilious, gastric, and hæmoglobinuric fevers, cerebral complications, and so on.

With regard to the second stage (*intoxication paludéenne chronique*) they deal closely with the *hyperémies phlegmasiques*; show the gradual elimination of the black pigment and the permanence of the yellow; and describe the fevers of this stage, particularly a *fièvre symptomatique*.

In the third stage (*cachexia hydrocémique et gangrène, and cachexia paludéenne chronique*) they exhibit the gradual disappearance of the black pigment and the *surcharge ferrugineuse* of the organs; and conclude with a picture of the final condition of the organs.

They do not finally accept the parasite as the *agent destructeur* because at the time there was still discussion on the point; but show themselves as being favourable to the theorem.

The general picture of the pathological anatomy presented by them is one of the deposition of both pigments in the first stage; and of the gradual disappearance of the black pigment and permanence of the irritating yellow pigment in the later stages. The clinical manifestations of the first state are, then, essentially those produced by the *agent destructeur* itself; those of the later stages are the results due to the yellow pigment, or perhaps, more correctly, to the conditions of the organs produced by it.

In the second stage of the disease they devote a whole sub-heading to a peculiar continued type of fever—the

fièvre symptomatique—which they consider is not due directly to the pathogenetic agent, but rather to the condition of the organs—the *phlegmasies hépatique et splénique*.

The applicability of this system to the questions now under discussion is obvious.

The three stages of paludism described by the authors coincide with the three stages of *Kala-azar* as defined by me.

The disappearance of the melanin (and, therefore, by implication, of the parasites) and the permanence of the yellow pigment, compares itself with my observations on *Kala-azar*.

8. There is no evidence to show that melanin always remains permanently in the organs.

9. In seven autopsies on cases of established *Kala-azar*, no difference could be detected between the cellular structure of the organs of cases in which melanin was absent and that of cases in which it was present. Fatty degeneration was generally absent.

10. No evidence was obtained by me of *Kala-azar* being due to any cause other than malaria.

11. Ankylostomes were found in a considerable number of the cases of *Kala-azar* examined by me.

12. Ankylostomes do not produce enlargement of the liver and spleen.

13. Numerous epidemics of a disease thought to be malarial fever are on record.

14. One of the malarial parasites of birds, *proteosoma*, is communicable from sick to healthy birds by the agency of the mosquito.

15. The mosquito stage of one of the parasites of human malaria has been partially followed.

These facts drive us at once to the following alternative:—

(a) *Kala-azar* is not malarial fever; but a disease macroscopically and microscopically similar, except for the absence of the parasites and melanin. If so, this disease exists also in British Guiana, and possibly in other localities; but only in localities where typical malarial fever abounds as well.

(b) It is malarial fever; in most cases of which the parasites disappear toward the later stages of the disease, and in a few cases of which the melanin also disappears at a still later period, leaving the enlargement of the organs accompanied by a low fever. If so, the disappearance of the parasites and melanin occurs also in British Guiana, and possibly in other localities, and must be explained.

The theories attempt this explanation. They endeavour to show:—

1. That a malarial infection consists of a continued pervasion of the blood by the parasites, which, however, in normal untreated cases increase and diminish in numbers in alternating periods, corresponding with the alternating periods of fever and apyrexia.

2. That this continued parasitic pervasion tends toward extinction, either by spontaneous exhaustion or by the gradual establishment of immunity in the host.

3. That special conditions, especially those in which *Kala-azar* occurs, are likely to accelerate this process of extinction of the parasites.

4. That the species of parasite concerned is likely to influence the amount of melanin deposited in the organs and, therefore, the period in which it is got rid of.

As far as I can gather, the low fever commences about the end of the first, second or third month of the illness; and it tends to cease, I think, in nine months or more from the onset of the disease. It is probable that the low fever sets in earliest in the severest infections.

It seems both convenient and accurate to select the low fever as the sign of the second stage; it is easily detected by the thermometer, and should represent the degree of the secondary effects, to which entirely, and not to the parasites themselves, I ascribe it (paragraph 32).

The parasitic invasion, however, probably lasts well into the second stage, ever decreasing according to its duration. At the same time the system feels the toxic effect of the parasites less and less; but suffers more and more from the residual condition of the organs and the low fever.

The melanin is, I think, constantly being eliminated as it is deposited; and some months after it ceases to be deposited, that is, after the invasion is exhausted, it is probably got rid of altogether in many cases. Judging from Case 71 this may be accomplished in seven months from the onset.

I am, therefore, of opinion, that though the objections to the malarial theory of *Kala-azar* are serious enough to require minute scrutiny, they are not strong enough to withstand the numerous facts in favour of the theory. I think, then, with Rogers, that *Kala-azar* is malarial fever, and that *Kala-jwar* of the Darjeeling Terai is practically the same as the *Kala-azar* of Assam.

RECOMMENDATIONS.

Kala-azar is a local disease; but it is a form of the most important of tropical diseases—malarial fever—and probably not confined to Assam, but occurs widely throughout the tropics. Hence it appears to me to be of great and general importance intimately bound up with questions of the proper diagnosis and treatment of malarial fever in general.

Kala-azar is interesting for the following reasons:—

(a) The frequent complication by ankylostomes.

(b) The early extinction of the primary malarial invasion, and the subsequent elimination of the melanin.

(c) The heavy incidence of the invasion on the spleen and liver; and the secondary low fever.

(d) The communicability of the disease.

With regard to the *complication by ankylostomes*, so much excellent matter has been written by Rogers that I have only some isolated remarks to offer. I agree with him that *Kala-azar* is not ankylostomiasis; but this does not imply that I under-estimate the importance of the worm in many cases of the disease, and in Assam generally as in other localities. These parasites were found in 11 out of 16 cases of *Kala-azar* which were carefully searched for them, and it was obvious that in several instances they amounted to a serious complication. In several, however, none could be detected; while in others they were obviously present only in small numbers and were producing no discernible symptoms.

I concur entirely with Rogers and others that when present in large numbers they produce a condition of severe anæmia which does not belong to *Kala-azar* pure and simple, and which often suffices to show the existence of this complication at a glance. The two diseases are quite different; the one being a fever, with an early history of a sudden febrile attack, leading to great enlargement of the organs; the other being a slowly progressive anæmia, without enlargement of organs, but sometimes accompanied by slight fever. This raises the general question of the proper diagnosis of ankylostomes. Are we ever justified in allowing these parasites to diagnose themselves? To wait until they have disclosed themselves by inflicting a grave, perhaps a fatal, injury, when we have ready at hand the simplest and most certain method of detecting their presence, would seem to be one of the most inexcusable of doctrines and practices. And this question does not apply only to Assam. It applies probably to the greater part of India. The worms have a very wide distribution, and probably cause a monstrous mortality.

The pleasant and easy beliefs so sedulously repeated, that the worms are harmless, or that they are harmful only in large numbers, such as five hundred or so, have certainly had a bad effect on tropical medicine. This has been noted by many writers, and the Sanitary Commissioner with the Government of India has referred to the matter frequently in his Annual Report—apparently without much influence on these unfortunate popular notions.

The stock argument against the harmfulness of parasites is that they often occur in apparently healthy persons. The total sickness produced by parasites must depend on the capacity for mischief produced by each parasite, the number of parasites, and the strength of the patient; and it is quite possible that considerable numbers of some parasites may exist in strong,

well-nourished hosts without causing mischief, while the same parasites in the same or smaller numbers may kill more weakly patients.

We possess in the microscope an easy and almost sure means of ascertaining the presence of ankylostomes—a means which must not be neglected in cases where the parasites may by any possibility exist. And this leads me to my first recommendation:—*The dejecta of all patients in localities where ankylostomes are present should be examined for the ova of these worms as a routine duty.*

This recommendation applies to many parts of India, to Europeans as well as Natives, to soldiers as well as civilians. Remarks as to its feasibility will be made presently. The use of thymol as a diagnostic measure is, of course, not generally excusable when the microscope can be used.

The question of the spontaneous *extinction of the parasitic invasion* in old cases of paludism is one to which I invite particular attention because of its bearing on treatment by quinine. Empirical practice has already discovered that this drug is not so efficacious in advanced as in early stages of the disease. Its effect appears to be solely or chiefly that of a poison to the parasites; and it is clearly unnecessary to employ it in large doses when there are no longer any parasites remaining to kill.

What my observations on *kala-azar* tend to show is that this stage may be reached very much earlier than, to judge by the continuance of fever, we may be led to expect. In such cases, however, the fever is the *febris secundaria post malarium*.

I am convinced that a similar early extinction occurs in thousands of cases all over India—that the invasion is often nearly or completely quelled at a time when the appearance of daily fever, sometimes of a rather severe type, would lead us to imagine it to be very active.

In many of the *kala-azar* cases in which such fever was occurring, the absence of the parasites was proved most conclusively, not only by a failure to find them in repeated examinations of the finger-blood, but by the fact that blood from the spleen contained no pigment.

Now quinine in large doses is invaluable during the parasitic stage; but in such doses it is often distressing to the patient, and may even be hurtful at a time when the patient requires good alimentation to support him through the illness. Why then give it when no longer required? This leads to my next recommendation:—*Before attempting to treat a chronic case of paludism, it is necessary to assure oneself as to how far the parasites are still present.*

We must not imagine that a case of chronic paludism always consists of nothing else but an invasion by the parasites of the red corpuscle. There is reason to believe that long after these

have vanished, the secondary effects which they leave behind them may still destroy the patient. Practically speaking most of the cases of *Kala-azar* at Nowgong were no longer cases of malarial fever; they were cases of enlargement of the liver and spleen with a concomitant low fever, and required treatment as such. The treatment which, I think, would commend itself to most practitioners would be that by alkaline laxatives, weak quinine and arsenic, and, above all, the best possible dieting. I recommend, therefore, that in the older cases of malarial fever the closest possible attention be paid to the secondary effects of the parasitic invasion.

These recommendations for diagnosis and management in paludism may be collected thus:—

1. Search for the parasites of malaria or for melanin should be made when required.

2. Early cases, in which the parasites are found by the microscope or are inferred to exist from the presence of the typical fever, must be treated by large doses of quinine (given, if possible, an hour or so before the birth of each fresh generation of the organisms).

3. Quinine in smaller doses should be rigorously continued after the febrile period, long enough to ensure the final extermination of the parasites from the system.

4. In older cases, it is necessary to ascertain how far the parasites are still present. If found, they must be exterminated as soon as possible by large doses of quinine. If not found, we have still no right to infer that they are absent; and should, therefore, exhibit small doses of quinine daily for weeks or months on the chance that some of them still remain.

5. Crescents do not produce fever; continued small doses of quinine are required when they only are present.

6. In other cases, we must always remember the possibility of any fever which may exist being wholly or partly a *secondary fever*, especially if it exhibit the characteristics given in paragraph 32, and if the spleen or liver are enlarged. It should be treated by daily small doses of quinine to ensure destruction of any parasites which may still be present, and by attention to the state of the organs to which this kind of fever appears to be due.

7. If the spleen be much enlarged, there is a presumption, as regards natives of India, that the parasitic invasion is quite or nearly exhausted; and this presumption is strengthened if there be no more attacks of the typical malarial fever. In such cases attention should be devoted particularly to the state of the organs; large doses of quinine will probably be found useless if not harmful; and we should depend on laxatives, tonics, and good food—especially, I think, fresh milk.

8. In the last stage, dieting and attention

to the frequent intercurrent complaints, such as diarrhoea, dysentery and worms, must be depended on.

9. In all cases of chronic malarial fever, microscopic examination of the dejecta for the eggs of worms, especially of ankylostomes, is an absolute necessity. And the examination should be repeated a week and more after vermifuges have been given, in order to ascertain whether any worms remain. The employment of thymol in large doses without previous examination of the dejecta is not as a rule defensible, unless the latter course cannot be adopted.

I have recommended the microscopical examination of the dejecta as a routine, and of the blood when necessity arises. It may be objected that these recommendations are impracticable and that medical men have no time to carry them out.

The examination of the dejecta is an extremely easy process, requiring only the humblest instruments and capable of being performed by all hospital assistants. Any medical officer can easily train his subordinates in a few days to do the work; and after that only his superintendence will be required. The *technique* is merely to place a small portion of the dejecta with a piece of stick in a drop of water on a glass slide, to impose a cover glass, and to examine with a medium power. The eggs of the different worms are figured in the text-books [14 and 26]. In my experience, medical subordinates soon take considerable interest in the task; and in short, there is little excuse for not making these very necessary examinations.

The examination of the blood, however, requires high powers of the microscope and some experience. Medical subordinates can do this work also, as I have found; but the medical officer must first be himself well acquainted with the subject. Though I certainly do not think it necessary, or even possible, to examine the blood of every simple fever case which comes to hospital, I do think it necessary for all medical men practising in the tropics to make themselves familiar with this, the most important part of the study of the most important tropical disease. It is impossible to ignore the exigency of this duty, however troublesome it may be. I should like to commend to those who care to undertake research the further study of the secondary fever; and to those who have opportunity for making autopsies, the condition of non-pigmented enlargement of the spleen.

With regard to the prevention of the present epidemic of *Kala-azar*, I have little to add to the recommendations of Captain Rogers in his report.

I am of opinion that *Kala-azar* is communicable from the sick to the healthy in some indirect manner, and that the infection tends to

cling to houses. I think also that there is a certain external condition required for the extension of the disease—probably the presence of some particular species of mosquito or other suctorial insect.

Any attempt to control the epidemic by the elimination of this external condition is not likely, in the present state of our knowledge, to be successful. It is necessary, then, as regards preventive measures, to treat the disease simply as a communicable one, and as one the infection of which adheres to dwelling—in other words, as a disease which spreads in a manner somewhat similar to plague.

The measures already proposed by Rogers appear to me the only ones likely to affect this; namely, (1) the control of communication between affected and healthy sites; and (2) the vacation of infected sites. I have been informed by Drs. Lavertine and Price that these measures appear to have been successful to a large extent in the tea estates near Nowgong.

In my opinion, however, based on a considerable experience, no measures aimed at controlling epidemics in India are likely to be successful unless placed in the hands of capable officers specially deputed for the purpose—as in the case of plague.

One or more energetic medical officers employed in this manner may be able to do much. If it be found feasible to make such appointments, the organisation may be briefly as follows:—

- (1) Each special officer should be placed in charge of a locality where numerous cases of early *Kala-azar* or severe fever are occurring.
- (2) Hospital assistants who have now been allotted to village dispensaries in that locality should be placed under his orders.
- (3) It should be his duty to make himself acquainted with the incidence of the disease in his district; to conduct any preventive operations which may be decided upon; and, above all, to superintend closely measures of medical relief in the most acutely-affected villages.

I lay particular stress on medical treatment, because I believe that much can be done in this line if, and only if, the treatment, be carried on under close European supervision. I refer specially to the treatment of early cases of fever by quinine. If camp dispensaries, under hospital assistants and supervised by the special medical officer, be placed near to villages where acute fever is raging; if the special officer be sufficiently active to visit these dispensaries frequently in turn and to attend personally as often as he can to the fever cases; if the patients be encouraged by his influence to take quinine

freely, I think it likely that a great saving of life will result. I say early cases of fever, because the old cases of cachexia are probably beyond treatment by quinine; hence the most recently affected villages should be selected for the experiment.

It would be fatal to the experiment to give the special officer too large an area to work over. An extension of the method could be adopted if the first results be at all encouraging.

The special officer should be allowed to move his own subordinates according to his discretion. His time should on no account be taken up by the compilation of returns. He should be encouraged to make all suggestions which he thinks fit to offer. He should understand that his duties extend to the care of patients and the prevention of the disease where practicable; and not to scientific research, except in the second place. He should know how to use the microscope for the treatment of malaria and ankylostomiasis. He and his subordinates would probably require tent equipage.

I do not know whether this scheme will be considered feasible. I fear, however, that I can suggest no other which is at all likely to have any influence in checking the present epidemic of *Kala-azar*.

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TEETH-BLOWS IN THEIR MEDICO-LEGAL ASPECT.

By

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IN this part of India, next to *lathi*-blows and their results, the most common complaint made to the Police is that of loss of a tooth. The reason for this is not far to seek: the definition of *grievous hurt*, which is accepted by the legal mind, ranges from emasculation to the loss of a tooth, and any injury which prevents the injured man from following his usual avocation for twenty days.

In the case of *lathi* or stick cuts of the scalp, we sometimes find healing deliberately delayed by the patient's endeavours to bring the case under § 320 of the Indian Penal Code.

In the case of loss of a tooth, the complainant's desire to be revenged on his enemy is still more *en evidence*. As I have had a great many of these cases on which a medico-legal report was necessary, it may be of interest to express the conclusions which I have arrived at regarding them.

Generally the complainant is a woman, and usually an old one. The story which she tells

is often, that she went to demand some money which the accused owed her, and that he refused to pay, emphasising his refusal by a blow delivered on her mouth with such violence that she became unconscious. The becoming 'unconscious' as a result of an assault is such a common lie that we need not consider this point at all.

The blow is declared to have been delivered with (1) a *lathi*, which is not seldom described as being as thick as one's arm; and if the complainant can she is anxious to make out that it was iron-bound, as a rule.

(2) A stone, thrown at close quarters, the stone produced being usually of very large size, and sometimes bearing distinct blood-stains; or

(3) the accused is alleged to have *kicked* the complainant on the mouth, and in such a case he is sure to have been seen to be wearing a particularly heavy pair of shoes on the day in question; or

(4) in some cases the *axe*—the usual companion of a jungle-man—is alleged to have been used—the head of the axe having been employed to inflict the blow.

In by far the majority of cases, the complainant produces the tooth which has been knocked out. This is generally old and dry, no matter how recent the assault may be stated to be; and invariably, as far as my experience goes, it is *entire* in so far that the crown and root have not undergone separation. This, as we see, distinguishes these cases from what one sees at home where, when some dumken rough has, in sheer good fellowship, knocked his brother-man's teeth down his throat, we find that the teeth have been broken off short at the level of the gum.

This fact, added to the usual sex of the complainant, for women are notoriously fond of embroidering the teeth, leads one to make a very careful examination of the injured part, and as a result of such examination, we find—

(1) No signs of any injury to the lips, gums or adjacent teeth, save a cavity more or less contracted and generally quite old, although the assault is alleged to have been committed at some very recent date (this, in face of the fact that the *lathi*, stone, shoe, or axe used to inflict the injury, is not capable of deliberately choosing out one tooth without touching the others); or

(2) All the complainant's teeth are loose, as a result of prolonged abuse of mercurials, prescribed by the village *vaid* for the cure of the syphilis from which he or she is suffering; or

(3) No sign of any injury at all, the gums being edentulous as far as the incisors are concerned, and quite shrunken and firm.

In such a case the incisor produced, probably, may certainly, has been supplied by a sympathising friend.

Cases of "loss of a tooth" then are, in my experience, false cases, and are due to the

complainant's desire to meet easily what are, to his or her mind, the requirements of §§ 320 and 325 of the Indian Penal Code. Up till now I have never seen a case, which I suspected to be true; and consequently, I am always on the look out to find one, to break the painful monotony of falsehood.

The reasons why the teeth of the Indian villager are not more often really knocked "down his throat," or at all events "out," are, I am inclined to think, these:

In the frequent quarrels which occur about "*zan, zar, zamín*," the *lathi* is used to *strike* with, the result being the severe scalp wounds which one so often sees. To cause the loss of a tooth, the *lathi* would need to be of considerable thinness, and used to *thrust* with.

Blows from the fist are rarely received by any of the combatants. When black eyes are given, the injury is usually caused by a beating with a shoe, often inflicted while the patient is lying on the ground. I have known of a notorious *badmash* stamping on his victim's face, with the result that the latter's nose was crushed flat; but the teeth were intact.

Finally, as any one who has done a fair amount of tooth-extraction can testify, the teeth of the Indian villager are by no means so brittle as those of Europeans.

THE PROGNOSIS OF GUINEA-WORM IN ITS RELATION TO THE ASSURANCE OF NATIVE LIVES IN INDIA.

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My attention was drawn to this subject by the agent of an English Life Assurance Company, which is at present pushing its business very much amongst the natives of India, and one of whose proposers was charged 1% extra for three years for an attack of guinea-worm three years before with one recurrence; the extra to be removed in case the guinea-worm did not recur during the subsequent three years. Now, the people of these parts are a careful and conservative folk, and, inasmuch as their forefathers did not assure their lives, are in no hurry to do so themselves; and any small impediment is quite enough to put them off. For the good of the progress of life assurance in Southern India then, it becomes of importance to ascertain if loading is really necessary for guinea-worm. I have, therefore, searched the records of the Sanitary Commis-

sioner with the Government of India for the ten years, 1886—96, and find that during that time the following cases are reported:—

	Average Annual Strength.	Total admissions for guinea-worm.	Admission rate per 1000.	Total deaths.	Deaths per 1000 per annum.	
European Troops	..	57	..	nil	..	
Native Troops	153,997	5,706	3·7	2	·013	1 invalided.
Jail Population	167,280	4,141	3·8	6	·05	

The assurance of European lives not being in question, the incidence of guinea-worm on the sepoy and jail populations need alone be considered. In both cases the figures are likely to be accurate as regards diagnosis and unlike any available from civil populations. These figures, however, do not represent the total sickness due to guinea-worm, as the practice of Jail medical officers varies considerably as to admitting all cases of guinea-worm, or treating some as out-patients. As regards mortality, too, the above figures are not a true index of its amount in the civil population, as both sepoys and convicts are under European medical treatment and so far better placed for recovery than the population outside, with whom its adoption is not only optional, but often practically unattainable. On the other hand, the sepoy and jail populations are mostly recruited from the poorer class of the community, in whom, as far as my experience goes, guinea-worm is commoner than in the more well-to-do class, from which life assurers are drawn. I have myself seen a large amount of guinea-worm, but so far no death from it; and only one case in which one of the lower limbs was much damaged by contracting cicatrices. Presumably, any mortality must be due to exhaustion from extensive sloughing caused by the worm. In the jail here, with a population of about 1,100 on an average, 365 cases have been admitted to hospital in the last ten years without a death, and a large, unrecorded, number treated as out-patients. As regards its liability to recur, I have caused 1,003 prisoners in this jail to be questioned. The Burmese convicts were not questioned. Those interrogated were practically all adult males from this and surrounding districts, unselected. Their statements can be accepted as approximately true, as they could not possibly tell what I was driving at and would consequently not know in which direction to lie. The tendency to round numbers, *e.g.*, ten, must be borne in mind, and the distant dates, *e.g.*, 1858, accepted with some reserve. Yet I think, on the whole, they may be accepted as a fair working index of recurrences.

The results were as follows:—

Attacked, once	...	...	52
" twice	...	...	34
" 3 times	...	...	29
" 4 "	...	...	12
" 5 "	...	...	11
" 6 "	...	...	14
" 8 "	...	...	3
" 10 "	...	...	11
" 12 "	...	...	1
" 13 "	...	...	1
" 14 "	...	...	2
" 15 "	...	...	3
" 20 "	...	...	1
" 30 "	...	...	1

or a total of 175 men out of 1,003 who had at one time or another suffered from guinea-worm. The 30- and 20-fold sufferers probably not only indulged in round numbers, but in a little romance as well.

Again, of these 175—

100 had had no attack since 1896 ;
23 had had an attack in 1896 ;

and of the 77 remaining, the average number of years of freedom, i.e., which had elapsed since the last attack, was 10·8 years, ranging back from 1895 to the seventies and sixties and even in one case to 1858.

Nine only complained of permanent effects, having been left by the attack, and of them I could find nothing worth considering except varicose veins on the skin of one man below a large scar over the head of the tibia, and a thick and stiff tendo-achilles in another.

One man had had a synovitis of the knee, I think due to guinea-worm. It did not recur after aspiration. I found no trace of worm in the fluid withdrawn, but am inclined to attribute this, and one other case of otherwise inexplicable knee synovitis I saw last year, to the worm. The other case also recovered. I find no mention of joint implications in the ordinary text-books.

Chevers in his "Diseases of India" (edn. 1886), p. 34, gives rather a formidable mortality-list for this disease; but as he draws his statistics from periods anything from 15 to 60 years back, and water-supplies throughout India are daily improving, inferences drawn from them do not hold good now; e.g., guinea-worm is now practically extinct in Madras City.

Davidson and Manson do not mention prognosis. The question, therefore, arises whether it is worth while hindering the progress of the assurance of native lives in India by imposing an extra rate for the small chance of death sometimes following from this disease in a proposer known to have harboured the worm before; and in this connection the experience of observers on the West Coast of Africa or other habitats of the worm would be of value.

Finally, 92 of those who had had more than one attack stated that their attacks were periodical.

MEDICAL SCIENCE AND THE STUDY OF NATURE.

*Lectures introductory to the course on Chemistry
at the Medical College, Calcutta,
Session 1899,*

By

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MAJOR, I.M.S.

YOU are met here to-day to commence the study of Chemistry, one of the most interesting and useful of the sciences. Hitherto your studies have been mainly of a general literary and academic kind. Now, however, as you have chosen the profession of scientific Medicine, you must begin the practical study of NATURE herself.

You all aspire to be Physicians. Well, what does the word 'Physician' mean? It means literally 'a Student of Nature,' from the Greek word "*physis*," 'Nature'; for physicians were at first the only Students of Nature. Even now no better definition than this could be given of the ideal Physician, notwithstanding the later distinctions which have arisen into 'Physician' and 'Physicist,' 'Physic' and 'Physics.' For, you should always remember that the more closely you study Nature and her science, the better physicians shall you become. And Chemistry, which is one of the great branches of natural science, is found to be one of the most fitting introductions to that study of Nature which you require for your medical career. Without a good grounding in Chemistry, you could not understand most of your more special teaching in medicine and surgery. Indeed so intimately is it associated with the treatment of disease, that the term 'Chemist' is often popularly applied, even to the mere mixer and vendor of drugs.

The scientific study of Nature is relatively modern. The Ancients, we may say without disparaging the great debts of learning and experience which we owe them, knew but little of Nature's great truths and ways of working. It is instructive, therefore, for us to see why it was that the Ancients failed to gain much scientific knowledge, so that we in the present day may avoid all such obstacles to science and progress.

This fascinating enquiry with its valuable lessons in what-not-to-do is in great part a history of human error and brilliant discovery.

Peering down the vistas of the past, we see how men seem to start with an absence of all law, then they slowly try to trace each effect to its proper cause, group together causes, and finally connect these by natural or artificial bonds into one orderly whole.

Primitive man, observing the great forces of Nature, which wreck his home and scanty crops, and the innumerable forms of matter and motion, which everywhere surround him in his

daily life, was soon overawed at the mystery and the majesty of it all, and, being unable to interpret these marvellous forms of matter and motion, he deified each and all of them and worshipped each in turn—fire, water, earth and air, the sun and moon and the planets, the storm and flood, and even the trees and the rocks. He saw God (or the devil) in all these: he became a *polytheist*; or seeing God in everything, as All-in-all—a *pantheist*. And in this belief he rested content.

The more civilized, however, man became the more he felt an insatiable craving for the Truth—the Absolute Truth; as was only natural, for the word “man” means the “thinker” from the Sanskrit *man*, to think, to understand. He wanted to know the secrets of Nature, and his own relation to external objects. What was the essential character of his own individuality or *ego*, of his own body; and what were the origin, causes, changes and interrelations of all this matter and motion which surrounded him, and the conditions favourable and unfavourable to life?

In these enquiries, the Ancients in the West as well as in the East made very little progress, because their methods of research were radically wrong.

DEFECTS OF ANCIENT MODES OF RESEARCH.

In attempting to fathom the secrets of Nature, one would think that the proper, and indeed the only, way would be to ask Nature herself: to carefully examine the various objects and their conditions in detail, and to question Nature by means of experiments. The Ancients, however, believed that they could solve these problems by mere abstract mental speculation without examining the actual objects themselves. Thus, *Socrates* and the *Cynics*, in common with many of your old Indian sages, who have still their followers even at the present day, sought in their philosophy a complete freedom from all objects and aims in life; and in so doing they renounced all attempts at Science, which is the only True Knowledge; for there can be no true knowledge in metaphysics, as this deals with the Unknowable.

They believed that, beyond Nature the true character of their own bodies as well as of external objects could be discovered subjectively by the mere exercise of the unaided intellect, and without any observation whatever. They therefore held themselves rigidly aloof from the object or subject they were discussing. Indeed, so worthless did they deem the knowledge which is obtained by the study of the object itself in the concrete, that some of those so-called philosophers are said to have put out their eyes, so that their minds might not be disturbed by external impressions, but might be left absolutely free to pure imaginings! Thus, those ancient philosophers were

mostly dreamers. They deceived themselves, and fell into gross errors and failed to make much progress in gaining real knowledge because they preferred the easy but treacherous paths of speculation to the safe though toilsome paths of actual observation.

Perhaps that dreamy stage of mystifying speculation suited that earlier stage of development to which the Ancients had arrived. Science is a more advanced stage, and recognizes, more fully than before, the unbridgeable gulf between the Knowable and the Unknowable, and so concentrates its exploration of Nature in healthier and more practicable directions.

It is not easy to investigate Nature herself. To do so was, in early days, not only deemed impossible, but it was deemed impious even to try. Natural phenomena were considered to be manifestations of the Gods. So when some one in Athens suggested that the lightning, the thunderbolts of *Zeus* or *Jupiter* (*Dyaus + Pitar* = Sanskrit for “heavenly father”) were only common fire produced by the collision of the clouds, there was a great outcry amongst the people. Such irreverence could not be tolerated against the greatest of the gods who rides upon the storm and hurls his bolts from the sky.

For religious reasons, therefore, any investigation of Nature was for long impossible. Men were to worship Nature at a distance, they were to be filled with awe and wonder in regard to her phenomena, but they were not to enquire too closely into these, or into her ways of working. Those persons who did so enquire were, as a rule, branded as sorcerers and wizards, and usually paid the penalty with their lives at the hands of intolerant priests and other bigots. So late as the 13th century A. D., *Roger Bacon* was tried at Oxford for sorcery and to disprove the charge wrote his famous book.¹

Notwithstanding this cruel persecution of those early seekers after Truth, some little scientific knowledge of an empirical kind was gradually accumulated by the Ancients, as we see from the increasing skill of the early craftsmen and magicians; and the writings of the old Egyptian, Greek, Chinese, and Indian philosophers on ethics, astronomy, physics, and the treatment of disease.

Prehistoric Stage of Knowledge and the Early Craftsmen.

The earlier men employed flints and other stones, the horns of animals, the bones of fish, shells and thorns as needles and knives, and for all the purposes which civilized nations now use metals. The use of metals required a certain degree of proficiency in some of the practical applications of chemistry, for the extraction of the metals from their ores, as none of the metals exist in the free state in Nature, to any workable extent. The word metal is

¹ *Epistola de secretis operibus artis et naturæ.*

the Greek term for a 'mine' (*metallon*), and implied artificial extraction. Copper, which is the most readily extracted, and bronze were used long before iron; so that it is customary to speak of the prehistoric ages of man as "The Stone," "The Copper," "The Bronze" and "The Iron" Ages.

Long before historic times man had acquired this art of metallurgy in Egypt. Iron must have been used to engrave the granite blocks of the pyramids and pillars of Egypt, the oldest monuments of the world, dating back to about 3000 B.C. In one of the oldest authentic histories extant—the Jewish Bible—we read of artificers in brass and iron, in Egyptian civilization, about 5,000 years ago.

Now, Brass is made from copper, which requires great art and industry to be extracted from its ore. And Iron is one of the most intractable of metals, requiring much pains and the strong action of fire to render it malleable and of service in the arts.

It is not easy to explain how mankind first acquired the idea of working the metals. It may be that men, seeing streams of melted minerals issuing from volcanoes, were led to try to work the metals by the help of fire. Or, various accidents might discover the metallic substances which the earth concealed in her bosom. According to the old traditions of Greece, iron was discovered by a violent forest fire in Mount Ida melting the iron in the soil, and thus allowing it to flow out upon the surface of the ground, where it became hard as it cooled.

Glass also is said to have been discovered by accident. According to Pliny, it was discovered by some Phœnician merchants who were returning from Egypt with a cargo of Soda (*Natron*) and landed on the sandy banks of the river Belus. There they used some lumps of *Natron* for their cooking pot fire, and the fire was sufficiently strong to fuse it with the fine sand of the river, and thus formed glass. However this may be, it must have been known from very early times, for we find representations of glass-blowing on the Egyptian monuments of Thebes and elsewhere dating to 2450 B. C.

The art of Dyeing also was a department of Chemistry cultivated in very early times. The Tyrian purple, the most famous dye of the Ancients, was obtained by a complicated process from a certain kind of marine shell-fish. The ancient Egyptians knew also how to fashion patterns in cloth and to fix them by the use of acids, &c., so that they do not wash out, in much the same way as Manchester merchants do at the present day; to tan skins to form leather; and they used metallic oxides to give their porcelain and enamels beautiful colours.

The art of Embalming bodies, so as to preserve them for countless ages, could never have been carried so far without the greatest skill in certain branches of chemistry; and embalming

was practised as early as about 3000 B.C., as is evident from the mummies of the earlier dynasties. Joseph, about 1700 B.C., we read in the Bible, commanded his physicians to embalm his body. Soap is mentioned by Pliny. Fermentation was known from very early times amongst the savages.

What practical knowledge of matter the Ancients thus acquired by working in metals, glass, pigments, embalming, fermentation, &c., was even in later times kept by them strictly to themselves as trade-secrets, and handed down only from father to son or to members of the guild. They never worked up their isolated scraps of practical knowledge into any scientific system.

Sacerdotal and Mystic Stage of Knowledge.

Nevertheless, in the Treatment of Disease, the Ancients, even in that Mystic period, gained considerable practical experience of an empirical kind, and this began to be recorded in very early times for the benefit of posterity. Its custodians were the priests, who wrapped it in mystery.

In Egypt, which has by far the oldest civilisation in the world, several thousand years older than your Indian, and in which country we shall see Chemistry had its birth, this special experience both of arts and medicine was collected about 1500 B. C., in an enormous cyclopædia attributed to their deified king THOTH, the HERMES of the Greeks, and latterly identified with Mercury, patron of the Arts of the Romans. This work, however, is clearly the composition of many writers. The last six volumes are devoted to Medicine: the 1st deals with Anatomy, the 2nd, with General Diseases; the 3rd, Instruments; the 4th, Remedies; the 5th, Eye Diseases, and the 6th, Diseases of Women. In its fulness it is said to rival if not surpass the famous Hippocratic collection of probably about a thousand years later.*

These early Egyptians seem to have been less addicted to delusive speculations than in a later age. They displayed laudable anxiety to gain the *practical* experience of others. They exposed their sick in public, says STRABO, so that any passer-by who had been similarly attacked might give the sufferer the benefit of his experience—though such promiscuous advice must at times have been inconvenient to the patient if he acted upon all of it. This custom also prevailed amongst the Babylonians, says HERODOTUS.

Later on, an Egyptian enactment compelled all who were cured of distressing diseases to record in the temples their symptoms and the treatment to which they attributed their cure. In this way the priests became the medicine-men, the sick flocked to the temples to learn

* R. Park's *History of Medicine*, p. 2, *et seq.*, to which I am indebted for several historical details.

from the priests the proper cure, the temples became the first hospitals, and the priests by their study of their records and drugs were sometimes able "to cast out the devils" of diseases. Medicine thus became in early Egypt a sacred art confined to an exclusive priesthood.

In India and China much the same stages appear to have been passed through at a later period. One of the earliest extant documents of India, namely, a stone-cut edict of the Emperor Asoka, dating to about only 230 B. C., refers to the institution of hospitals in India under Buddhist influence.

The early Greeks in the mythical heroic period before the Trojan War (1184 B.C.) raised their most famous physician, ÆSCULAPIUS, to be the chief patron of Medicine, and made him a demigod. He had been so successful in healing disease and in prolonging life, so runs the legend, that the God of the Dead, Pluto, alarmed at the fewness of the new arrivals complained to Jupiter, who then destroyed this audacious healer of men. Temples were erected to his honour by his grateful countrymen, and these were located usually near springs of hot or mineral water or other health resorts, as the Greeks depended more on sanitary measures, athletics and physical exercises for the prevention of disease than on drugs. After the Trojan War in which two sons of Æsculapius are mentioned by HOMER as skilful surgeons, this cult spread still more widely, probably owing in some measure to the extensive maiming and sickness, resulting from the war. The practice of the medical art became restricted to the priests in his temples, whilst the other mystic arts, including the primitive chemistry seem to have been appropriated by the priests of HERMES.

This *Mystic or Sacerdotal Stage* lasted in Egypt and early Greece down until about the time of HIPPOCRATES (460—377 B.C.), the greatest of the followers of Æsculapius, when there dawned what has been called the *Philosophic Stage* of the Arts and Learning, the Golden Age of ancient Greece.

Philosophic Stage.

By about 500 B.C., or slightly before the epoch of Buddha in India, attempts had begun to be made by the ancient Greek philosophers to construct a scientific theory of Nature. It was first believed that all bodies consisted of two elements—fire and earth. Air when rarefied became fire and when condensed water, and water when heated became air, thus connecting the idea of rarefaction with heat. EMPEDOKLES originated the idea of four distinct conditions or so-called 'elements' of matter—earth, air, fire and water—neither of which was capable of passing one into the other, but forming all bodies by their intermixture in varying proportions. These elements he believed were acted on

by two forces, a uniting force or 'amity' and a separating force or 'discord,' thus corresponding generally to our attraction and repulsion. To prove his four-element theory, he quoted the following rough experiment, which is interesting as showing some scientific faculty of observation: "Wood is burnt upon a hearth; fire seems to be evolved from it; the smoke is air; moisture is deposited on the hearth-stone; while the ashes are earth; hence wood is made up of earth, air, fire and water." HERAKLEITOS, about 460 B.C., made fire not only to be the one essential element, of which the others were only mere condensed forms, but he believed it to be the principle of life and the motive power of the universe. Fire had long previous to this been worshipped as the symbol of the deity by the Chaldeans; and later by the Zoroastrians, and *Agni*, the God of Fire and Light, was the first in the Hindu Trinity.

The Empirics.

Hippocrates refers to the four elements, also four elemental qualities: "Heat, Cold, Moisture and Dryness," and as applied to disease four "cardinal humours," namely, "Blood, Bile, Black Bile, and Phlegm."

Hippocrates, who was a contemporary of Socrates, worked upon the more healthy system of Empiricism, on the facts of his observations. His treatises, some of which are apocryphal, reveal much close observation of disease, though marred by wild and grotesque speculations on anatomy and functions. Some of his terms, such as 'crisis' in disease, still survive.

Amongst other quasi-scientific writers of those days may be mentioned DEMOKRITOS (460 B.C.), ARISTOTLE (384—322 B.C.), LUCRETIUS* (99—55 B.C.), ARCHIMEDES, whose hydrostatic balance and filter still survive, and PLINY. Vestiges of that four element theory still persist in our modern nomenclature, thus: 'fixed-air,' the eight elemental earths, 'the alkaline earths' *aqua-fortis*, *aqua regia*, and *eau-de-vie*—with which last 'whisky' is said to have the same meaning.

As instances of some of the advanced chemical products of those earlier days may be cited "Greek-fire" which was used, as early as the second century B. C., to destroy ships and houses in warfare. It consists of a solution of Phosphorus in Bisulphide of Carbon or other volatile solvent, and, as you see, sets fire to wood or other inflammable substance when we throw it over them, as soon as its solvent evaporates. Other classic instances of ancient chemical operations are found in the story of HANNIBAL dissolving the rocks with vinegar, and of CLEOPATRA dissolving pearls by the same means. The ancient list of Chinese 'elements' gives 'iron and wood' instead

* For his conception of Nature, see *Epicurean Science and Poetry selected from Lucretius*, by I. B. Muirhead, M.D., London, 1895.

of 'air.' The Indian works referring to such subjects are relatively modern—the Institutes of *Manu* dating only to about 500 A.D., the *Brihat Samhita* to the sixth century A.D., and the medical summary of the Ayurveda by *Susruta* to the seventh or eighth century A.D., and most of the so-called 'Ancient scriptures' or Purānas are still more recent, and their 'science' seems inspired largely from Greek or Chaldean sources.

The Alexandrian School.

Amongst all these great teachers and thinkers of the philosophic stage, the keenest observer of Nature was without doubt Aristotle, one of the great scientific heroes of the world. He corrected many of the mistakes of the Hippocratic School. He was the friend and tutor of ALEXANDER THE GREAT, and so imbued his enlightened young sovereign with a love for Nature that Alexander on his invasion of Asia in 327 B.C. collected himself in the Panjab and Sindh and elsewhere all sorts of rare animals and other curious objects, and forwarded them to Aristotle to found a Museum, for which he also provided the funds. The founding and endowment, also during this period of the great library at Alexandria, made Egypt again the greatest centre of learning in the world. Of this magnificent gift it has been well said: "Alexander the Great and his successors collected the intellectual and natural riches of the universe, as they knew them, and placed them at the disposal of studious men to benefit humanity; and this did more to immortalize the founder of the collection than all his victories and other achievements."

As a result of this great library at Alexandria and the university which sprung up around it, Egypt made great advances in medicine, especially through the more accurate knowledge of the human body gained by dissection. This innovation of dissection was actively supported by the PROLEMIES, after Alexander's death. When the great library was burnt by Julius Cæsar, CLEOPATRA induced Mark Antony to transfer thither the almost equally famous library of Pergamos. This new library, also shocking to say, was burned by another Roman emperor, Diocletian in 290 A.D., through fear lest the Egyptian people might use their magical books to grow rich and revolt against the Romans. Thus most of this ancient learning was lost to the world. Notwithstanding all this Roman oppression and vandalism, however, the Alexandrian school still survived. Galen, the great Roman anatomist (131—201 A.D.), advised his readers to go to Alexandria for practical instruction.

This great practical school was finally and utterly destroyed, however, in 640 A.D., when the Arabs or Saracens swept over Egypt and Southern Europe. The restored library of 500,000 volumes was then consigned to the flames, and these precious books, says the historian of that event, fed the fires of the numerous

public baths over the city for four months.

The Dark Middle Ages.

This extinction of the lamp of learning in Egypt and South-Eastern Europe was followed by the Dark Middle Ages of Europe when civilization retrograded. Strange to say, this prevailing darkness was relieved chiefly by those barbarous Arabs who had caused it, or by their successors. After their first fierce onslaught on this ancient civilization, so much higher than their own, they seem to have repented their vandalism, and tried to preserve the remaining fragments of knowledge, thus inherited by conquest from Egypt, Greece, and Roman culture; and, as a consequence, for several centuries during the Middle Ages, the Arabs were the chief patrons of learning in the West.

Revival of Learning.

This general eclipse lasted until the Revival of Learning in the fifteenth and sixteenth centuries A.D.

Scientific Stage.

Then modern science began slowly to arise, as the result of the *Experimental* and *Inductive Methods* of research.

We to-day are fortunate to live in an age when the great Truths in Nature are no longer hidden by a mass of sophistries, and when it is possible for a youth to know more of Nature, than the most learned philosophers ever knew, even a few generations ago. Indeed the term 'Science' nowadays has become so familiar that it is being much abused. It is applied not only to such charlatan creeds as Theosophy, Homeopathy and other worthless speculations founded on altogether false views of Nature, but it is often applied to the extravagant speculations of many so-called scientists themselves to dignify their dangerous theories even when they go far beyond what is warranted by their facts of observation and experiment.

You, as students of modern Medicine, therefore, must endeavour to cultivate the scientific habit and work methodically, if you would be worthy of the spirit of the age and make any real progress. On the other hand, you must carefully abstain from weaving together the real and the unreal, from indulging in speculations not fully warranted by your facts, if you would not mislead yourselves and those who are trusting you; for this, as we have seen, was the great defect of the Ancients. Their so-called 'Knowledge' failed to stand the test of time, because it was *not* The TRUTH, the absolute untarnished Truth, which Science demands.

Science itself is now so vast and universal, and so much beyond the compass of any one individual that it has been necessary to subdivide it into separate branches, to enable one to grasp its main features more readily and take up a particular branch in detail.

CHEMISTRY AS A SCIENCE.

Chemistry is one of these great branches. It also has now become subdivided in many special directions, according to its application to the mineral, vegetable, and animal kingdoms, to the arts and manufactures, to the various conditions of life in health and disease, physiological and pathological chemistry.

What is CHEMISTRY? Chemistry has been defined as the science which teaches us the *composition* of material bodies and the *changes* which matter undergoes. This knowledge we get by separating the substances into their elements, that is *analysis*, (from *ana*, up, and *lysis*, a loosening), or by building up things from their elements *synthesis*, (from *syn*, together, and *thesis*, a putting.) A chemical change implies a real and permanent change in the composition of the matter, by chemical action or force, in contradistinction to *physical* action where the physical forces heat, light, electricity, and magnetism merely act upon a body without producing any real or permanent change in the composition of that body.

Thus, if we act on this piece of Iron by one or other of the physical forces, no real or permanent change is produced: if we heat this iron bar to redness you see that it expands, and in so doing pushes the index of this apparatus to the left, but on removing the heat, the iron contracts on cooling to its former dimensions; for the heat produced no real change in the iron. Again, if we act on the iron by electricity, if we cause this piece of iron to convey an electric current, it becomes for the time a powerful magnet, an electro-magnet, so that you cannot pull off from it this smaller piece of iron which it holds by its attraction; but the instant the electric current is stopped, the attracted piece of iron falls, as the bar returns to its original state, for there has been only a temporary physical alteration and no real permanent change in its matter. So too with this electro-motor revolving magnet, immediately the electric current is stopped, the revolution ceases.

Again, to take another substance—Sulphur; on heating this yellow sulphur it melts into a dark brown fluid, but on cooling it returns to its former state, as only a physical alteration has occurred. On rubbing this stick of sulphur it develops electric properties so as to attract these pith-balls, as friction and electricity are only different modes or forms of the same force, namely, motion. But this acquired electricity ceases immediately the friction is stopped, because no real permanent change has happened.

On the other hand, in chemical action, a real and permanent change of matter occurs, such as when two substances having an affinity for each other unite to form a new compound. Mere mechanical mixture, however, is not chemical union. Thus, when you powder this iron and sulphur, by filing down the iron and pounding

the sulphur, and you mix these powders as intimately as you can, still these two substances remained uncombined and unchanged. The mixture is a dark grey powder, the mean of the colours of the two constituents, by a microscope you can see the particles of iron lying amidst the sulphur, and by physical means you can separate out the iron from the sulphur. Thus, when we place some of the mixture on a glass plate and apply a strong magnet underneath, we can draw out and aside the particles of iron from the sulphur, also by throwing the mixture into water, the heavier iron particles sink at once, while most of the sulphur floats, as no true and permanent change has happened in the matter.

But if we heat this mixture of iron and sulphur so as to fuse it, then a chemical change occurs. These two substances in melting combine to form a black mass which is a new substance, unlike in appearance either of its constituents and with different physical properties. Thus it is no longer attracted by a magnet, nor can it by rubbing, attract pith-balls. Neither does the iron or sulphur tend to return to their former condition as they have been permanently changed, they have undergone *chemical* change.

In chemical changes heat and light are frequently evolved. Thus when this Iodine, a dark blue scaly metal, is brought in contact with this Phosphorus, a yellow cheesy non-metal, the two combine as you see to form a brown mass with such violence that fire is produced. Again, when this Antimony, a silvery metal, is introduced into this jar of Chlorine, a greenish yellow gas, light and heat are produced, and dense white fumes are formed of Chloride of Antimony which is unlike either of its constituents. When this Chlorate of Potassium and Phosphorus are put into this beaker of water and a few drops of Sulphuric Acid are added by a thistle-shaped funnel, violent change happens, explosions and fire occur under the surface of the water owing to the evolution of Chloric Acid which takes fire and ignites the Phosphorus under the water: these products being very different from any of the substances which yielded them. Again, this Ammonia gas and Hydrochloric Acid gas, both invisible gases, combine to form these white fumes of a Camphor-like solid which is wholly unlike either constituent. These substances have by chemical force become permanently changed into bodies utterly unlike those from which they are derived.

This fact then of *Change*, a permanent change in the form and physical properties of matter, is the fundamental fact of all chemical action. And it was this fact of chemical change which also seems to have impressed the workers in the early magic and crafts from which chemistry sprung.

THE ALCHEMISTS.

Their Search for the Philosopher's Stone.

They searched for "the Philosopher's Stone" which was to CHANGE all common metals into

gold, and to CHANGE *old age* into youth. For in those remote times, as at the present day, the uppermost wish in the minds of most men seems to have been the craving for wealth and long life.

Thoughtful men could not fail to see the marvellous *changes* which are everywhere occurring in matter. How the crude vegetable material which was consumed as food underwent mysterious change in the living organism. "At one time it built up the body of a writhing worm, at another it entered into the production of a ponderous pachyderm, or daintily cropped by a graceful gazelle, it became a creature whose beauty has been the theme of the poets and singers of all time. In the person of man himself, not only did it assume its highest material development, but it was the fuel on which the immaterial fed, and originated thoughts and ideas which controlled the destinies of men and nations."

Since the organisms in which these wondrous changes were wrought contained certain tubes for the conveyance of fluid and others for carrying air, and as there were in the earth running streams of water and fissures through which air might enter, what could be more natural than to suppose that in the bosom of the earth herself as in animals a like transmutation of baser into finer material took place, and dull unclean substances like lead or even earth in process of time, by a refining action, became pure gold:

"For t'were absurd

To think that Nature in the earth bred gold
Perfect in the instant. Something went before;
There must be remote matter."

This idea of an analogy between the processes in the body of an animal and those in the earth, having once been accepted, it would then be evident that the earth by reason of its lower organization would require longer periods of time to develop a lower into a higher form of matter. Nature might spend centuries in the transmutation of the useless into the valuable, but if man were to accomplish the same result, he must seek for methods by which the time would be very much shortened. Hence they were led to experiment in the hope of finding 'the Philosopher's Stone' which would change all things into gold, and the elixir of life which would change old men into young and give perpetual youth and beauty. To gain these objects, pious men prayed to be shown the path by which they might reach their idol and wild enthusiasts ever seeking the unattainable laboured on incessantly.

This alluring search for the art of transmuting the baser metals into gold is almost coeval with the earliest history of man. We find it first associated with early Egypt. The somewhat mythical deified king THOTH or HERMES, the son of Osiris, who was king of Thebes

about 5,000 years ago, was regarded by Albert Magnus as the first discoverer of transmutation. HERMES was certainly one of the most celebrated of the ancient Egyptian sage-heroes, and his name is supposed to survive in chemistry in the current expression to—'seal *hermetically*'—on enclosing a substance in a glass tube and fusing the mouth of the tube, the latter was said by the alchemists to be secured with the seal of Hermes. In all these operations an incantation like the mystic OM! was believed to play an important part. By means of the mystic rites and crude chemistry of the magic-book of the god Thoth, it was fancied that even the heavens and earth could be bent to man's will. The Egyptian priests were amongst the first to devote special attention to the study of transmutation. They conducted their experiments secretly in their temples and inflicted death upon any of their class who sought to betray the secrets of their sacred art.

Indeed the word '*Chemistry*' itself indicates the Egyptian origin of the art. Egypt, as we know from Plutarch, was called '*Chemia*' or 'black' from the black colour of its soil, and the word Chemistry thus would seem to mean 'the Egyptian art,' though it also had the literal sense of 'the *black art*,' on account of its dealing with the dark or hidden properties of matter. And '*Al-chemy*,' as this art was latterly called, is merely the Arabic form of the word bearing the prefix *Al*, or 'the' and meaning '*The (art of) Chemy*;' for after their sack of Alexandria, the Arabs; as we have seen, possessed themselves of many of the Egyptian secrets of this black art, and it was through the Arabs chiefly that the knowledge of this art spread over Europe in the middle ages carrying with it the Arabic form of its name.

In their search for the philosopher's stone, which was to change substances into gold, these mediæval Alchemists were the first to propose a definite chemical theory of matter which, although afterwards disproved, did a great deal towards establishing scientific chemistry, by leading men to perform experiments and so discover the properties of many bodies. In this way Alum, Green Vitriol, Blue and White Vitriol, and many other substances were discovered and described.

Transmutation into Gold,

The theory of the later Alchemists was that the then-known metals were essentially similar in composition, because they possess so many properties in common, namely: density, lustre, malleability, etc.; and that the essential difference between the metals was due to the preponderance of one or other of two principles of which all metals are composed, a metallic principle and an earthy principle. The noble metals contained the metallic principle in a very pure state; and were therefore unalterable by heat, whilst the base metals, such as lead, contained so much

earthy matter that they lost their metallic qualities in the fire and became dull dross. These two constituents were believed to vary both in their proportions and purity, so that a change even in their condition would produce some other known metal. Thus gold and silver were supposed to contain a very pure metal, which in the first case was combined with a red, and in the other with a white, earth.








Hence the Alchemists strived to remove the baser parts of the common metals and so set free the gold and silver which they were supposed to contain.

In these operations, in order to maintain secrecy and also for the sake of brevity, these

most common salts Silver is called '*Lunar caustic*.'

Quicksilver, the nimble, volatile metal was associated with Mercury, the swift-winged messenger of the gods, and was represented symbolically as being in reality gold with a superficial covering of silver, but beneath these lurked grosser earthy matter which was represented by a Maltese cross—the so-called '*caduceus*' of the god, to give an idea of its supposed angular and acrid qualities. To obtain gold from mercury, therefore, all that was needed was to remove the silver and the earthy matter and whatever remained after this operation would be gold.

ALCHEMICAL SYMBOLS.

Metal.	Symbol.	Planet.	Corresponding Week-days		Symbolic Colour.
			after Saxon deity.	after Hindu deity.	
GOLD.....		Sun.	Sunday	... <i>Rabi</i> ...	Yellow.
SILVER.....		Moon.	Monday	... <i>Som</i> ...	White.
IRON.....		Mars.	Tuesday (<i>Tuīreo</i>)	... <i>Mangal</i> ...	Red and green.
QUICKSILVER...		Mercury.	Wednesday (<i>Woden</i>)	... <i>Budh</i> ...	Black.
TIN.....		Jupiter.	Thursday (<i>Thor</i>)	... <i>Brihaspati</i> ...	Grey.
COPPER.....		Venus.	Friday (<i>Friga</i>)	... <i>Sakra</i> ...	Red.
LEAD.....		Saturn.	Saturday	... <i>Sani</i> ...	Blue.

ancient pioneers of chemical science introduced a symbolic language to represent matter and its changes. They associated the seven then known metals with the seven greater heavenly bodies and planets.

Thus *Gold* was represented by the sun, and silver by the moon, and the other metals according to their fancied relations to the planets or to gold. In this diagram you see a representation of these symbols, and some details which I have added to show their Indian planetary names and relationships. It is easy to see how gold would be represented by the sun on account of its shining yellow colour, perfection and beauty—as the noblest of the metals.

Silver would naturally fall to the moon with its pale silvery light, it was therefore represented by a crescent, and even now one of the

Copper was associated with the goddess Venus whose looking-glass was a plate of burnished copper. It was supposed, as you see from its symbol, to be composed mainly of gold with earthy impurity lurking beneath. This, symbol also, as that of the most typical female, is now used in Natural History to denote the female sex in plants and animals.

Iron being the metal which afforded martial spears and shields was associated with Mars, and as you see was regarded as essentially gold with earthy matter, which latter was so much more evident than in copper, that it was represented on the top and as a barbed dart significant of its use in the service of the God of War. And this symbol of the most masculine of the gods is now employed in Natural History to mark male specimens.

Tin, which crackles when bent, was associated with the crackling thunderbolts of Jove, the God of the Sky, and its symbol while representing the arc of the sky and a bolt also shows that it was believed to consist of silver with earthy impurities, not intimately mixed, but at one side. This symbol for Jupiter is especially interesting for you, as it is believed to survive in the prescriptions of the present day in the downstroke of the R which heads these documents. It was invariably placed by the alchemists at the commencement of a formula or prescription in order to propitiate the most powerful of the gods, in the same way as in this country pious Hindus head their documents with an invocation to Ganesh, Durga, Hari, or other lucky or powerful deity.

Lead was allotted to the dull despised watery Saturn, that planet which is slowest in its revolution and furthest from the source of heat—the sun—and therefore supposed to be icy in character and evil in influence; and its symbol shows that it was believed to consist of silver mixed with earthy matter. If the latter were removed pure silver would remain.

These signs became in the hands of the alchemists the commencement of a symbolic system of chemistry.

Egyptian Alchemy.

An interesting light is thrown upon the mystic Egyptian Alchemy by an old document which was found in a tomb at Thebes and which is now at Leyden in Holland, and which has only lately been translated (by M. Berthelot).^{*} It is the note-book of a goldsmith of the third century B.C., who was engaged in the attempts to make fraudulent imitation gold and silver to deceive the public. It contains receipts for over a hundred operations on metals and chemicals, amongst others the proportion to be used of cut tin to imitate gold. It is, therefore, curious to see that Chemistry which reveals to us great Truths of Nature had its origin to a great extent in attempts to impose upon the public; for alchemy survived so long as it did largely through the deceptions practised by its votaries on their rich patrons.

Still later *papyri* manuscripts from Egypt—mostly from *mummies*—during the periods when it had fallen under Greek and still later Roman rule, show still further developments—greater skill in making artificial stones, making metallic oxides as pigments, colouring of enamels, jewellery and painting writing in letters of gold and many other craftsmen's discoveries. But almost all these discoveries were lost to the world at the burning of the great library of Alexandria, as has been already mentioned.

Although most of this knowledge of these arts and other ancient learning was thus lost a consi-

derable amount was preserved by the Greeks in their literature and by the Arabs. Here we pass at one bound from the later Egyptian and Greek ages to the seventh and eighth centuries of the Christian Era.

Arabian Alchemy.

The Arabs who in 640 A.D. overran Greece and Egypt, and from the latter country spread along North Africa to Morocco and crossed over into Spain by Gibraltar (Jebel-Tarak), had succeeded to a good deal of the literary and scientific wealth of the Greeks, not so much directly, as through the translations of their neighbours, the Syrians and Persians. In adopting amongst other arts derived from the Egyptian and Greeks, the '*Chemý*' art, they gave it, as we have seen, their Arabic definite article as a prefix so as to term it The '*Chemý*,' or Alchemy. Other instances of such words coined at this period of Arabic activity are seen in *Alkali Alembic* ('embic' being a kind of cup), *Alcohol*, *Algebra*, *Almanak*, &c.

The most celebrated of those Arabian Alchemists was Jāber, commonly called GEBER, who lived in the ninth century.* He enjoyed such a reputation as a master of the art that, during the Middle Ages of Europe, he was credited by Latin writers with the authorship of many treatises which he never wrote, and with much chemical knowledge which really belonged to a period five hundred years later. Still his undoubtedly genuine writings (preserved in Leyden and Paris) show that he was familiar with the hydrostatic balance with many species of minerals, and he discourses on the changes produced by heat and by cold. But there is no reference to mineral acids to nitrate of silver and other chemicals which Geber has been supposed to have known. He describes many chemical operations such as filtration, crystallization, distillation, sublimation and by these he prepares new bodies or purifies the old ones. But most of the writings of Geber were written in a crabbed symbolic language, and so difficult to understand even by the initiated that his name under the form of *Gibberish* came to mean sayings or writings which were nonsensical or unintelligible.

It was these medieval Alchemists who propounded the working chemical theory of the metals which we have already collated. Their labours were not altogether in vain. For, in search for the philosopher's stone they gained a great deal of knowledge of the properties of matter, and the knowledge thus accumulating formed the basis of structure on which Chemistry ultimately arose. It was not, however, till the 14th century A. D. that strong mineral acids were discovered, and that valuable solvent for gold

^{*} *Collection des anciens Alchimistes Grecs*, 3 vols., and *La Chimie au moyen âge*, 3 vols. By M. Berthelot, Paris, 1896.

^{*} Roscoe and Schorlemmer's *Treatise on Chemistry*, Vol. I, also Berthelot, *op. cit.*

aqua regia; and the earliest mention of *alcohol*, as a spirit got by distilling wine, does not occur till the 12th century A. D. The fact that wine yielded an inflammable substance, was noted already by Aristotle, but this body was not isolated till about fifteen centuries later.

The Elixir of Life.

The Alchemists did not confine their operations to the search for the philosopher's stone which was to turn all metals into gold. They also strived to find an Elixir of Life—an ambrosia or *amrita* which would secure an object dearer even than lucre, namely, prolonged life, perpetual youth and beauty, and be “a panacea for all the ills that flesh is heir to.” This search led to the discovery of many potent medicines for the treatment of disease and so far confirmed the belief in the healing power of the coveted philosopher's stone. In this search was found a third constituent of matter which was called ‘Salt.’

Hitherto the old working theory of Nature which had dominated the minds of students of Nature since the days of Aristotle, was that all inorganic matter was essentially of one kind or of two kinds, metallic or Mercuric and earthy or Sulphuric, to which now this third or Salt was added; and that the infinite variety which occurs in Nature was due to the greater or less preponderance over these of one of four conditions—the so-called ‘elements,’—namely, Earth which implied Dryness and Coldness, Water, which was Coldness and Wetness, Air which was Wetness and Heat, and Fire which was Dryness and Heat. These ‘elements’ which were not the material substances so called, were supposed to be acted on by a force of attraction and repulsion. And these conditions were also believed to affect the humours of the body and cause disease.

This assumed composition of inorganic matter was extended by PARACELUS (1493-1541 A. D.) to animal and vegetable bodies as well. He held that the health of a living body depended on the continuance of the true proportions between these three hypothetical ingredients, while disease was due to a disturbance in this proper relation. Although Paracelsus was in some ways almost a charlatan, he did considerable good by maintaining that the proper use of alchemy was not to make gold but drugs, and be the handmaid of Medicine.

A century and a half later an Englishman ROBERT BOYLE (1627-1691 A. D.) overthrew for ever the Aristotelian and Paracelsian doctrine of the elements. He may be called the Father of Chemistry as opposed to Alchemy. He was the first to grasp the idea of the distinction between a truly elementary body and a compound body produced by the union of two or more simple bodies, of which latter he showed there was a considerable number. In 1661 he published his

quaint “*Sceptical Chymists, or Chemico-physical Doubts and Paradoxes touching Experiment whereby vulgar Stagyristes are wont to evince their Salt, Sulphur and Mercury to be the true Principles of Things.*”

THE BIRTH OF CHEMISTRY.

By this time, too, a new light was coming into the minds of the honest alchemists: the printing press had distributed considerable knowledge over Europe, and the fanciful ideas of the infatuated believers in transmutation were giving way to the realities and ingenious experiments of the working philosophers. In England ROGER BACON, several centuries before (1214—1294 A.D.) had shown the value of the inductive and experimental methods, JOHN MAYOW (1645-1685 A.D.),* had laid the basis of pneumatic chemistry, with remarkable Chemico-physiological researches on respiration and Oxygen, or as he called it ‘Nitro-aërial Spirit,’ as he obtained it from Nitre. BAYLEY had shown the physical properties of certain gases, and SIR ISAAC NEWTON had made his name famous. HARVEY (1578—1637 A.D.) had discovered the circulation of the blood and started physiology, and in France and Germany other observers had made interesting discoveries in Physics and Chemistry.

As men came to understand the nature of elementary bodies, and the limitations of their powers over Nature they saw that they might as well think of changing a worm into an elephant as of changing iron into gold. Alchemy, therefore, with its golden and delusive dreams, which had flourished up till as late as the seventeenth century of the Christian era passed away, and chemistry which arose out of its ruins came to be studied for its own sake, as one of the most useful of the sciences and of especial use in the treatment of disease.

The real starting point of *Modern Chemistry* was the discovery of the true explanation of COMBUSTION—the explanation of the changes which bodies underwent by fire, a question which for long had puzzled the earlier chemists.

False Theories of Combustion.

When metals are burned in the air, an earthy residue remains which was called a *calx*, from the Greek word for a stone or earth. Thus, this piece of bright metallic Magnesium, when we ignite it, burns with a dazzling pink flame, and the metal is converted into a dull white powder or earth, wholly unlike the metal itself—it has become a *calx*—‘Calced Magnesia.’ This calcination of metals was defined by the alchemists as ‘the pulverisation of a metal by fire.’ But actual fire is not needed for this calcination. At the ordinary temperatures some metals

* Roscoe and Schorlemmer's *Treatise on Chemistry*, Vol. I, also Prof. Crum Brown's *Harveian Oration*, at Edinburgh, 1899.

like Gold and Silver preserve their lustre practically untarnished; but other metals, such as Iron, on being exposed to the air at ordinary temperatures become crusted over with a brown earthy substance which from its reddish colour you call 'rust.' If you go on removing this crust, more will form until all of the iron is converted into this rust, which is the 'calx' of iron.

Lead exposed to the air undergoes little change; but if we heat it to fusion, you see that its bright surface is soon covered over with a scum or dross. This is popularly believed to be impurity, but it is not really so. For when it is removed fresh scum is formed, and this can be continued until all the lead is converted into this 'scum.' This scum on lead bears the same relation to the lead that rust does to iron—it is the 'calx' or 'rust' of lead.

This piece of lustrous Copper when burned in the air has its surface coated with a black powder which is the 'rust' or 'calx' of copper.

Here, then, we have metals undergoing change in the air with the formation of an earthy substance called a 'calx' which is altogether unlike the metal itself.

Even the Ancients, from their acquaintance with metallurgy, were aware of the fact that the metal could be recovered again from many of these earthy substances. Thus I take a small quantity of this lead dross and heat it with red-hot charcoal, and it becomes metal again. Yet in the process of conversion of the metal into dross and back again into metallic lead, nothing can be seen to have been added to the metal or taken away from the dross.

To account for this phenomenon STAHL (1660-1734) formulated a theory which was, that all bodies capable of burning contained an inflammable and *invisible* substance which he called *phlogiston* (from the Greek *phlogistos*—burnt, combustible) which was given off when the metal was burned. To get back the metal then, you only require to add *phlogiston* to the powder and the metal is 'revived.' This theory of STAHL'S soon prevailed all over Europe, and it was of great use in assisting in the classification of elements; but it was at length found that although *qualitatively*, this theory answered the case well enough, when taken *quantitatively* it gave a contradictory result. For it was found that when metals were burned in the air, instead of weighing less they weighed more, as you see in this experiment where we burn Magnesium; thus *loss* of Phlogiston, led to *gain* in weight, which was impossible! This false theory, therefore, had to be given up, though it lingered on till near the end of the eighteenth century. And here also we have an instance of the value of the balance in chemistry in upsetting false theories by the logic of precisely observed facts.

The next great step towards the true theory of Combustion was made by JOSEPH BLACK of

Glasgow. When limestone (or shells or marble, which are essentially the same) is burned in a kiln it becomes caustic; and it was at first believed to have absorbed this caustic principle from the fire. Black was the first to show what actually occurred. He found in 1754 that lime on being burnt in a kiln instead of weighing more, it weighed less; and he showed that the non-causticity of the lime was due to an invisible gas which differed from ordinary air in that it was caught and *fixed* by certain solid substances, hence he called this new gas "Fixed air." Further he showed that the '*mild*-alkalies, differed from the '*caustic*-alkalies' by the presence of this so-called 'fixed-air,' which we now call Carbon-dioxide. Here we have some of this invisible gas, and you see that it is heavier than atmospheric air; for when I pour it into this equipoised bell-jar, that arm of the balance at once goes down; it does not support combustion as you see this light candle is extinguished when I introduce it into the gas; and this gas has the property of forming insoluble compounds with the earthy alkalies, as you see when it is passed into lime-water.

This discovery then of this new gas called 'Fixed air' explaining why limestone became caustic when roasted in the fire, cleared the way for the discovery of the true explanation of combustion which was the real starting point of modern chemistry.

(To be continued.)

A Million of Hospital Practice.

A CASE OF ULCERATION OF THE CÆCUM FOLLOWED BY MULTIPLE ABSCESES OF THE LIVER.

UNDER THE CARE OF

LT.-COL. J. MAITLAND, & CAPT. A. E. GRANT,
I.M.S., I.M.S.,

General Hospital, Madras.

MAJOR J. —, an officer of the Royal Artillery, reported sick on the 7th March 1899, complaining of pain in the left side and fever.

History.—Had served in India for the past ten years during which time he had been ill on one occasion only, namely, two years previously when he suffered from an attack of malarial fever that lasted four days. About six weeks previous to his present illness he suffered from slight looseness of the bowels, but thought nothing of it and did not consult a medical man. With this exception he appears to have enjoyed very good health as instanced by the fact that he frequently went out snipe-shooting the whole day. He was temperate in his habits.

History of present illness.—He attended parade on the 7th March apparently in perfect

health. From this he returned to his quarters, perspiring heavily and changed his clothes opposite an open window through which a strong breeze was blowing. He then went to stables and whilst on this duty was seized with a severe pain about the upper part of the epigastrium. He reported sick, and was seen by Major R. T. Macleod, R.A.M.C., who has very kindly furnished the following notes of his case taken up to the 14th March, when he was admitted into the General Hospital in Madras.

7th March.—Complained of pain under the lower ribs on the left side, aggravated by movement. No cough. Temperature 100·5. Tongue dirty. Bowels constipated. Liver not enlarged. Tenderness on left side under the lower ribs. Ordered ammonium chloride mixture and calomel and colocynth pill. Milk diet.

8th March.—Pain increased. Poultices ordered.

9th March.—Pain persistent and severe. Tenderness on pressure under lower ribs left side. Tongue furred white. No pleuritic friction sounds. No increase of dullness.

10th March.—Pain much less. Temperature in the morning fell to 99°. Same treatment. Also 10 grains of quinine.

11th March.—Slight increase of dullness in epigastric and left hypochondriac region, and slight bulging in same locality, apparent on inspection and palpation. Bowels not opened. Calomel repeated.

12th March.—Fever continues accompanied by copious sweatings. No rigors, no pain. Slight tenderness in epigastrium. Temperature rose in the evening nearly to 104°. Quinine repeated, and 20 grains of ipecacuanha given.

13th March.—Slightly better. Temperature 99·4. Bowels opened twice; loose bilious motions. Evening temperature 102·2.

14th March.—Morning temperature 100·4. Bowels opened several times in the night. Stools loose, bilious. Slight tinge of jaundice evident, principally in the face and conjunctiva. Otherwise no evident change. On this date he was transferred to the General Hospital, Madras.

On admission he seemed rather exhausted and was perspiring heavily, otherwise he did not appear to be very ill, save as regards the physical signs. General hepatic enlargement and a swelling partly in the epigastrium and partly in the left hypochondrium. No pain even on palpation. Perspired profusely during the night.

15th March.—Right lobe of liver enlarged upwards posteriorly and in the mid-axillary line. Friction sounds heard all over the right lobe. Symptoms otherwise unchanged.

16th March.—No important change. It was observed that the patient was somewhat delirious

and talked at random, but he could always collect his senses and answer questions properly.

17th March.—Does not complain of any pain even on palpation of the epigastric swelling. Sweats rather profusely. The emanations from the body have a peculiar odour suggestive of pyæmia. Slight further increase in dullness over the right lobe of the liver. It was decided that an operation should be performed the following morning. During the night the patient became comatose, the temperature rose to 107°, and death took place at 3 o'clock in the morning.

Post-mortem examination.—On opening the abdomen the descending colon is seen to be greatly distended and pushing inwards towards the middle of the lower part of the peritoneal cavity—the latter contains yellowish serous fluid. The upper part of the abdominal cavity is shut off by recent soft adhesions forming a space containing pus and communicating with an abscess on the under surface of the left lobe of the liver. The lower margin of the latter is adherent to the transverse colon. A considerable number of adhesions much firmer and older than those seen in the upper part of the abdomen are found in the right iliac region binding down the lower part of the ileum as well as the cæcum, as if there had been previous perityphlitis. The hepatic flexure of the colon is adherent to the under-surface of the right lobe of the liver, and the transverse colon forms part of the inferior wall of the above-mentioned abscess cavity.

The liver is adherent over all its surface, the adhesions being soft and recent. Weight 116 ounces. Deeply congested. On the posterior surface of the right lobe as well as the under surface of the left lobe an abscess, situated close to the surface of the organ, has burst. On section, six abscesses are found in the right lobe and one in the left. These abscesses vary in size from that of a walnut to that of a small mango. The walls are ragged and of a dirty brown colour. The contents consist of thick brownish yellow substance. The liver tissue between the abscesses in the right lobe is dark, brownish purple in colour. That of the left lobe is much less congested.

The large intestine is distended. The cæcum and adjacent part of the ascending colon contains several large ulcers and numerous smaller ones. The larger ulcers lie transverse to the axis of the bowel. The intestinal coats at the seat of the ulcers are much thickened. The surface of the larger ulcers are rough and gray in colour, the smaller ones blackish. The edges are thick and raised above the floor of the ulcer as well as the contiguous mucous membrane. Patches of congestion are seen in other parts of the large intestine, especially in that part which is adjacent to the abscess.

(To be continued.)

THE
Indian Medical Gazette.
 JULY, 1899.

ENTERIC FEVER IN INDIA.

THIS perpetual scourge of Europeans in India, and especially of the young Europeans who form the British Army and a considerable proportion of the Civil population, is, as its great importance demands, elaborately discussed in one of the many admirable scientific articles in the last report of the Sanitary Commissioner with the Government of India.

In this particular article, which extends to sixty pages, with six additional pages of precise references to the various authorities cited, Surgeon-General Harvey critically reviews the most recent European and Indian researches and theories on the causation and spread of this malady, and applying these results to the special conditions of the Indian climate, he records some new observations lately made in this country and indicates the gaps in existing information. This work, therefore, not only focusses for us the widely scattered publications of the most modern observers, but it is also in itself a distinct contribution to the advancement of our knowledge of this disastrous disease.

The whole of Surgeon-General Harvey's helpful article merits the most careful study of every medical practitioner in India. Here we can only give a few extracts from it.

After showing the reaction which has set in against the extreme opinion that enteric fever is exclusively a water-borne disease, and detailing the evidence in support of the view that the great bulk of the ordinary form of this fever is, on the contrary, derived from the soil, Surgeon-General Harvey notes that:

"When outbreaks occur simultaneously over a wide extent of country, they may be due to some combination of polluted soil and climatic conditions, with here and there incidental secondary contamination of the water, rather than to simultaneous accidental fouling of water-supplies. A specifically polluted soil is to the inhabitants of the place a constant threat of danger through the water-supply, as well as through the many other channels by which its particles can reach the interior of the body, while the non-specifically polluted soil is only one degree less dangerous, for it is a favourable nutrient medium prepared and ready for the enteric microbe whenever it shall arrive.

"To those who say that *Climate* is nothing, the parasite everything, it may suffice to point out that it takes two to make the disease, the host and the parasite; that these two are engaged in a life-and-death struggle, that even a slight advantage or disadvantage on one side may decide the result; and that the Indian climate is certainly not bracing to the European constitution. In the same way a native of India, if transported to England, is depressed by the cold, has his lungs irritated and is much more apt to fall a victim to tubercle than in his own country. Many experienced medical officers are impressed by the occurrence of cases which seem to show that over-exertion in the heat renders a man an easier victim, and that with respect to enteric fever liability too much exercise is more dangerous than too little.

"Though the presence of the enteric bacillus has been but seldom reported in the intestine or gall-bladder of men not suffering or recovering from enteric fever, there are those who believe that it is often present, and would be more often found if looked for oftener and with adequate means. According to them, men very generally carry about in their bodies the enteric bacillus, which remains quietly waiting its opportunity. That a man escapes is due either to permanent insusceptibility or to temporary insusceptibility or to the absence of the bacillus. According to them again, a man may get enteric fever in one of two ways. Either some indiscretion of diet or exercise, or a lowering climatic influence, diminishes his power of resistance and enables the bacillus, hitherto resting peacefully in his body, to become an active invader of the same; or while he is in a susceptible condition, bacilli from the stools of another case gain access to his body through water, food, etc.

"Experiments on animals by Remlinger and by Chantemesse appear to their authors to have had more satisfactory results than those of previous observers.

"Osler seems now to have adopted the opinion of Sanarelli, quoted on page 25 of the report for 1894, that *enteric fever is no more primarily an intestinal than small-pox is primarily a cutaneous disease*. On the other hand Sidney Martin is of the old opinion that the disease probably begins at the intestine and not at the blood.

"Block on two occasions cultivated the enteric bacillus from a hypodermic-syringeful of the patient's blood, and after death the bacillus was found in the liver, spleen, kidneys, and in a piece of retained placenta,—along with other microbes. Takaki and Werner succeeded in finding the bacillus in blood taken from the roseola.

"Cases of enteric fever without intestinal lesions have been mentioned in former reports. Osler now divides cases of enteric fever as follows:—firstly, ordinary cases with intestinal lesions; secondly, septicæmic cases, general infection without special local manifestations, the diagnosis being made by means of Widal's reaction and by means of cultivations of the bacillus from the organs; thirdly, cases with localisations other than intestinal,—pulmonary, splenic, renal, cerebro-spinal; fourthly, cases of mixed infections. This division meets with the approval of the *Lancet* reviewer. Chiari and Kraus report a number of cases in which the presence of Widal's reaction during life caused the organs to be searched for the bacillus, though there were no intes-

tinal lesions. In some, the bacillus was found in the gall-bladder, mesenteric glands, spleen, kidneys, urine; while in others, though no bacilli were found, the fluids of the body continued to give Widal's reaction *post-mortem*. Others also have reported cases. Their experience seems to indicate that 'pure septicæmic enteric fever is relatively frequent.' Durham, on the other hand, is of opinion that to the bacillus of Gaertner, and not to that of Eberth, belong the similar cases of 'septicæmic enteric fever' which he had seen described as occurring in France, in which death occurred before typical typhoid lesions developed. Some of the observers who have brought forward the cases without intestinal lesions point out that if the bacillus is to be found at all in a body it will likely be found in the gall-bladder; and that in the gall-bladder it may remain more or less inactive for long periods after health is re-established, during which at any moment it may be excreted into the intestine, and so perhaps make a healthy man a source of infection to others. The bacillus is even said to have been found in the gall-bladder in one case in which there was no history of previous enteric fever. Horton Smith reports that it was found in the feces of convalescents 12 days after defervescence by Brieger, and 41 days after by Lazarus and that he himself found it in urine 22 days after. It has also been found in abscesses years after.

"The spread of enteric fever through the air around the patient is generally doubted; but Dr. Budd strongly maintained that such communication was not only possible but frequent, and Dr. Corfield believes that he was right. There are others who believe in the direct infectiousness of enteric fever, especially in the crowded dwellings of the poor; but it may be considered doubtful whether the disease would, even under such circumstances, be conveyed without the agency of dirty fingers and other uncleannesses.

"The idea that flies convey infection is probably a very old one. Of late years many medical officers have referred to the matter in reports on outbreaks of enteric fever or cholera; and many of the cook-houses for British soldiers in India are protected with wire gauze for the very purpose of shielding food from the visits of flies, which may have come from latrines or other unclean resting-places. Among the neatest bacteriological investigations of the subject was one in which flies were allowed to alight upon a culture of *bacillus prodigiosus*, this bacillus being chosen because of the striking red colour its cultivations display, and then given opportunity to walk over the surface of sliced sterilised potato. The results were, as might have been expected, positive and conclusive. Various other experiments also, all with positive results, have been made with flies and other insects as to their power of conveying the enteric, cholera, cholera nostras, tubercle, and anthrax bacilli, and the staphylococcus. The microbes in an active condition were also found in the excrement deposited broadcast by the flies. Lately a report, couched in somewhat superlative terms, has been published in the *Lancet* to the effect that an American scientific commission, appointed to examine into the causation of enteric fever in the

military camps, had come to the conclusion that flies were the chief agents in the spread of the disease. Very interesting and important, though not bearing directly on enteric fever, are the investigations of Amedeo Berlese. His experiments prove conclusively the great part taken by insects, especially ants, and several kinds of fly, not only in the distribution (as was already known), but also in the preservation and multiplication of alcoholic ferments. Insects, far more than the atmospheric air, contribute to the dissemination of yeasts, which they convey rather internally than externally. There is, moreover, reason for believing that during the cold season some yeasts are chiefly preserved, and perhaps increased, within the organs of insects.

"Under the ordinary conditions in which *Milk* reaches and is kept by the consumer the enteric bacillus is capable of maintaining its existence in it, but without multiplication; in fact, it undergoes diminution, the rapidity of which depends on the number of rival microbes present. It can also exist in sterilised milk curdled by the *bacillus lactis*, and also in sour milk, so that it may possibly find its way into curd-cheese. It is said to survive for 48 hours in butter-milk. An epidemic in Hamburg, which chiefly affected women and children, was considered to be due to those properties of the bacillus. In bad and dangerous milk a bacillus, which is either the colon bacillus or a near relation of it, has been found.

"The general opinion among those best qualified to judge is, at present, that the only possible way in which *Sewer Gas* and evil-smelling air can contribute to the causation of enteric fever is by lowering the general health and resisting power of men.

"Heat remains the best disinfectant agent for the prevention of the disease—cooking of all food, boiling of water and milk, cremation of stools; and these measures have been practised to a considerable extent in India. All authorities seem agreed that pathological stools should be burned, and certainly so in times of epidemics. But as it is not always possible to know that a stool is pathological and pathogenic, and as the burning of all night-soil is out of the question, the greatest attention should be paid to the proper disposal of the dejecta by superficial burial. Those concerned should lay to heart the words of Poore, quoted in the present paragraph under the heading 'Soil,' and also the following of the same author:—

'In order to prevent contamination of the water, it is best to burn the stools. But in the country it would be best to put the excreta near the top of a recently-tilled, humus. Merely digging a trench, filling it with excreta, and covering it firmly with soil simply preserves the fæces, and does not lead to their disintegration.'

"At hill stations also all stools known to be those of enteric fever should be destroyed. For the burial of the rest of the night-soil, which will always contain some dangerous stools, there is difficulty of getting sufficient land on the hill-sides; and the best plan is to convey the night-soil in wire-tramways down the hill-side as far as may be thought desirable, or till a suitable trenching ground is reached. This system is working well at Murree, Gharial, Kuldunnah, and Lower Topa.

"16. As usual, many medical officers point out the influence of youth and of recent arrival in India; and some call attention to the increase of enteric fever subsequent to the arrival in a station of a new regiment or of fresh drafts from England. The medical officer at Ahmednagar goes so far as to say that newcomers to that station are as such more liable to the disease, even though it be not their first term of residence there. Three men appear to have already contracted the infection before they landed in India. In 1897, as in former years, some cases were held to have originated *en route* from Bombay to inland stations, and the medical officer of Mhow calls for more stringent measures to protect fresh arrivals at Bombay, at Deolali, at the rest-camps, and while in the train. Again, medical officers frequently noted, especially in the case of hill-stations, that the disease must have been contracted before arrival, either from impurities encountered on the march, or from a cause existing in the previous station, so that the station where the disease was treated was not always the station in which it was contracted. For example, eleven of the cases treated at Peshawar are said to have originated on field service. Some patients acknowledged having drunk foul or doubtful water in native villages, by the roadside, when out shooting, when bathing in a dirty stream, in the bazar, or from a forbidden source in cantonment. At Jhansi, Bangalore, Deesa, Subathu, and Amritsar it was noticed that men employed away from barracks, as military telegraph signallers or policemen, or in practice and exercise camps, or at training and musketry, were liable to attack, whether from fatigue and exposure, or from having had opportunity to drink unclean water. While in some cases heat and fatigue were held to have been predisposing influences, in others illness was dated from a chill due to a wetting, or from a chill following over-heating. The medical officer at Mhow considered that insufficient clothing had rendered a certain body of men more vulnerable. The water-supply was considered liable to contamination at Umballa, Dagshai, Subathu, Poonamallee, Mandalay, Ahmednagar, Mhow, Nasirabad, Hyderabad, and Sitabaldi; while in Fort Lahore, examination having thrown suspicion upon the well-water, recourse was had to a fresh source of supply. Apparently, Calcutta, Attock, Madras, Bangalore, Wellington, Ramandrug, Rangoon, Thayetmyo, Purandhur, Nasirabad, and Taragarh are still exposed to the danger involved in a double water-supply; and the medical officer of Nasirabad mentions that men had confessed to having drunk of the water reserved for washing and gardening, and notified by sign-boards as "Not for drinking," a water in which the presence of the enteric bacillus had several times been reported. Besides this, in the drinking-water of Lucknow, Fatehgarh, Meerut, Muttra, Agra, Subathu, Meean Meer, Amritsar, Cherat, Mhow, and Deesa the bacillus, or a near relation of it, was found, mostly, or in every case, by Mr. Hankin. Two medical officers report that the same bacteriologist discovered the enteric bacillus in specimens of water that had been boiled and passed through a Pasteur filter. Mr. Hankin found the bacillus in milk from Fatehgarh and Dagshai. On the

other hand, the result of the examination of water from Sitapur, Ranikhet, Chakratta, Jhansi, Dagshai, Solon, and Ahmednagar was negative. At Quetta the arrangements for the supply of water to the kitchens and to the soda-water factories was considered such as to risk contamination of the water, and the *bacillus coli* is said to have been found in a specimen of soda water. In the beginning of 1898 Surgeon-Major Davies, on special duty, found a bacillus of the colon group in the water of the Mhow supply. Where *pakhals* and *mussacks* continue to be used, it appears, at least on paper, that systematic efforts are made to secure their constant disinfection, the most difficult cases being those where the use of leather vessels coincides with a double water-supply, and necessitates the provision of two sets of *mussacks* and *pakhals*. In some cases it appears that dislike of boiled water, or of water treated with permanganate of potash, was the cause of men resorting to forbidden sources, and anyone with a taste for water must sympathise with these men. The combined result of six stations was that 65 cases occurred among total abstainers, and 121 in non-abstainers, or 35 and 65 per cent., respectively. But, as their average annual strengths cannot be obtained, no conclusion can be drawn as to the relative liability of those two classes. An outbreak in Umballa was attributed to water drawn by a *bhisti*, to save himself trouble, from a well close to some old filth pits. At Indore a patient stated that he had drunk a quantity of soda water in a brothel about a week before the onset of his illness; at Hyderabad a soldier had drunk lemonade in the bazar ten days before admission; while at Chakratta a man who contracted the disease had drunk out of the bottle of a comrade in hospital suffering from enteric fever, the supposition being that the latter had contaminated his bottle in using it. An outbreak at Cherat was traced to the adulteration of milk with the water of a dirty tank, this water containing the enteric bacillus. The butter and milk were believed by a committee to have originated the first out-break of the year at Mhow; and, though doubts have been thrown upon the validity of this conclusion, it was found that the dairy arrangements were very defective. As usual, some medical officers point to the comparative immunity of women and children as an argument against the probability of the disease having been carried by the water or milk supplies, or to the scanty numbers and sporadic distribution of cases as an argument against its having been water-borne. The enteric fever of some stations was described as not epidemic but endemic, with regular spring and autumn exacerbations. The medical officers of three or four stations point out that all the attention lavished on the disinfection of the water has made little difference in the amount of enteric fever, and draw the conclusion that enteric fever is mostly contracted in the bazars, away from the barracks with their sanitary arrangements. Most medical officers are of opinion that much enteric fever is contracted in the bazars, and especially in the brothels; and, in support, the medical officer of Fort Allahabad notes that eight out of nine cases occurred in the persons of bachelors, one of them having primary syphilis when admitted for

the fever; while, on the other hand, it is said by the medical officer of Nasirabad that no cases have been admitted from the married quarters for some years. None of the reports for 1897 mention the effect on the amount of enteric fever of placing the bazar out of bounds, though there are nearly a dozen references to the effects of this measure upon the statistics of venereal disease. The danger from the careless and dirty habits of natives allowed to be about barracks, and especially of native cooks, is insisted on by several medical officers. Two of them suggest that the men should be made to cook their own food, and this reform has actually been carried out in the case of Subathu. In some stations elaborate rules have been introduced to secure cleanliness in the kitchens, and measures have been taken to exclude flies. An outbreak of enteric fever in the hospital at Jhansi was attributed to the surreptitious introduction from outside of bazar-made sweetmeats and butter. At Dagshai the bread was freed from suspicion by examination. The medical officer at Nasirabad thinks there may be something in the fact that enteric fever is most common when there is most dust blowing about. It was discovered by the medical officer at Campbellpur that the clothing of enteric patients admitted to hospital was stored without being washed, and, in the event of the patient's death, was sold without having been disinfected. At Dagshai it was noticed, as in some other years, that tonsillitis and sorethroat were prevalent at the same time as enteric fever. Of Bernardmyo, which was first occupied in 1888, it is said that there is no record of the occurrence there of enteric fever; and Darjeeling and Colaba are reported as comparatively immune. The reasons given for immunity in the case of Roorkee were a small garrison and no drafts arriving; in the case of Dagshai military prison, the not allowing any natives inside; in the case of Murree, a good and abundant water-supply and careful sanitary attention; in the case of Colaba, the fact that the water-supply is at no point liable to contamination. Again, the reasons given for a diminution of the disease were, at Shahjahanpur, keeping natives away from the barracks; at Ranikhet the great precautions taken to secure cleanliness of water and milk; and at Dalhousie the sanitary measures of recent years. Among the measures considered to have been successful in staying an outbreak were removal from the neighbourhood of the unclean water (Umballa); boiling and permanganating the water, and inoculation of the supply with *micrococcus Ghadiallii* (Meean Meer); permanganating the water (Kamptec). The presence of the *micrococcus Ghadiallii* in the milk used by a regiment at Dagshai did not, however, apparently prevent that corps from suffering severely from enteric fever. That non-commissioned officers at Umballa suffered little was considered possibly due to the fact that only mineral waters were consumed at their messes. Some regiments and batteries have made very complete arrangements for securing cleanliness in their aerated water factories and in their dairies, but, as a rule, the existence of weak points is reported. For the purification of water alum appears to be used only in about half-a-dozen stations, whereas boiling and permanganating with more or less thoroughness

seem to be general. The Larymore boiler, as made and used by the jail department of Bengal, is being introduced at some stations, and has so far met with approval. Incineration of enteric stools is reported from Dagshai, Subathu, Jutogh, Mooltan, and Gharial; but it seems that those are not by any means the only stations in which such a procedure is carried out. At Chakrata urine, faeces, etc., were boiled. Finally, on account of the difficulty of maintaining biological cleanliness in all things in India, some medical officers, amongst whom is he of Chakrata, desire the prophylactic inoculation of all men coming to the country."

One cannot fail to recognise the practical value of such articles for advancing the important problems with which they deal further on the way towards a satisfactory solution. For they undoubtedly incite to greater activity in fresh research along more promising lines.

LONDON LETTER.

THE LIVERPOOL SCHOOL OF TROPICAL DISEASES was formally opened by Lord Lister on the 22nd of April. The School owes its origin to Mr. Alfred L. Jones, a West Africa merchant, who, at the annual dinner of the Royal Southern Hospital, on the 12th of November 1898, offered £350 a year for the purpose of founding a school for the study of tropical diseases. This offer was accepted by the hospital authorities on condition that the University College should be associated in the undertaking. The condition was readily endorsed by the college, and Dr. Robert Boyce, Professor of Pathology in that institution, has been the principal promoter of the scheme. A ward of the Royal Southern Hospital containing 12 beds has been set apart for tropical cases, and a laboratory has been constructed close to it for the purpose of examining blood, urine and other materials. The ward has been named the "Samuel Henry Thompson ward" after the father of the donor of the Thompson Yates laboratory, which was opened a few months ago, also by Lord Lister. This laboratory will be available under Professor Boyce's superintendence for work connected with the school. A liberal response has been made to an appeal for funds, and the work is being started on a sound financial basis.

Two appointments have been made on the instructive staff, namely, Dr. Annetas Pathological Demonstrator and Major Ronald Ross, I. M. S., as Lecturer on tropical diseases. Lord Lister opened the ward and presided at the inaugural

banquet, which was attended by a very distinguished assemblage of persons representative of various interests and institutions, medical and otherwise. In his speeches, he dwelt on the importance of special study and education in disease peculiar to the tropical colonies and dependencies of the British Empire, and on the value to patients and students alike of associating hospital treatment with the more minute investigations of cases, and greater attention to pathological inquiries and questions, which the working of a medical school implies. It is at present proposed that four courses of instructions, each lasting two months, will be delivered every year, and that the School will be available for qualified men only. Liverpool is in close and constant communication with a large number of tropical places, and numerous cases of tropical diseases have been treated in the Royal Southern Hospital in past years. The cases which occupied the special ward on occasion of Lord Lister's visit had contracted their maladies in China, India, Brazil, Savannah, South Carolina, Sierra Leone, Forcados, Old Calabar, Benin, and Cape Coast Castle. Patients of all nationalities are admitted, and it is intended to train negroes as nurses for service in Africa, Central America and the West Indies. The question has arisen whether the course of instruction given in this School will be recognised by the Colonial Office as qualifying for Colonial Service, or whether candidates for such appointments will have to attend the new London School. On this subject, Lord Lister had a personal interview with Mr. Chamberlain, who said that recognition would depend on what the School should turn out to be and do. Meantime, apparently, men will be forced to resort to the London School.

A WORD FOR NETLEY.

It is curious to note that while these schools are being heralded into existence with feastings and trumpetings, no one seems to have a kindly thought or speak a grateful word for the Netley School, the mother of all tropical and service schools, in which, not far from half a century ago, the teaching of tropical hygiene and pathology was organised on a broader basis than has been as yet decided upon in any of the new institutions. On the contrary, there seems to be a disposition in some quarters to discredit and deplete Netley. The fact is that the training at Netley, apart from

its tropical aspects, is specially devised for military service, and supplies an element which no civil school can contribute. But, even if this special military element were eliminated, the course of instruction at Netley has been so arranged that in point of clinical material and work, systematic teaching, theoretical and practical in hygiene and pathology and detailed exposition of the specialities of military medicine and hygiene and hospital management, it would be difficult to equal the Netley curriculum, and there appears to be no intention of so doing in the new schools.

SECRET COMMISSIONS.

An important movement has been started in England with a view to the repression of an insidious and very demoralizing form of bribery. The vice is the universal Indian *dusturi* under another name. It has been exposed in a very aggravated form by the Hooley Revelations in the promotion of companies. The procuration of big names by big payments has been used to impart a fictitious importance to commercial enterprises, and people have thus been induced by practically false representations to pay for worthless shares or embark in doubtful ventures. But the system largely pervades social life in even more mean and reprehensible shapes. Servants are bribed by tradesmen, officials by contractors and so forth, and the outcome in every case is imposition,—the sale of rubbish at the price or over the price of sound material.

The Lord Chief Justice of England seeks by introducing a bill into Parliament to render the giving of secret commission punishable by law. Such a step would be impossible in India, but the matter is one which members of the medical profession might well take to heart with a view to spontaneous eradication of the taint wherever it exists.

MEDICAL *DUSTURI* IN INDIA.

It has been asserted by the London Chamber of Commerce that the reprehensible practice of accepting secret commissions from druggists, instrument makers, opticians, undertakers, *et hoc genus omne*, is rife among members of the medical profession. The British Medical Association has very properly taken the matter up, and while doubting the existence of the practice to any material extent, has strongly condemned it as unprofessional. Has the bane of *dusturi* contaminated the medical profession in India?

I am afraid that to some extent it has, and that the unworthy 'tricks of trade' are not unknown among members of a profession in which trade principles and methods should be unknown.

INCREASE OF VACCINATION IN ENGLAND.

It is satisfactory to observe on good authority that, notwithstanding the concession made to conscientious objectors by last year's law, the practice of home vaccination and the use of glycerinated animal lymph are causing a sensible increase of vaccinations in many parts of the country.

K. McL.

11th May 1899.

Current Topics.

BIRTHDAY HONOURS.

THE members of the medical profession in the Indian section of the Birthday Honour List are not numerous. Surgeon-General A. A. GORE, late Principal Medical Officer, H. M.'s Forces in India, received the Companionship of the Bath. Lieut.-Colonel W. G. KING, I.M.S., Sanitary Commissioner, Madras, well known in connection with the preservation of vaccine lymph, and his researches on the natural history of cow-pox, received the Companionship of the Order of the Indian Empire. Colonels BARNETT and TOWNSEND, R.A.M.C., and Lieut.-Colonels W. K. HATCH and BOOKEY, I.M.S., are made Honorary Surgeons to the Viceroy; and the title of Khan Sahib is conferred on Senior Hospital Assistants Jan Mahamad, Nasiruddin Khan and Aziz Mahamad Khan, of the Subordinate Indian Medical Department.

MOSQUITOS AND MALARIA.

CIVIL Surgeons, with entomological proclivities, are asked by Government "to make collections of mosquitos and other flies that bite men or animals, in accordance with the instructions contained in Professor Ray Lankester's pamphlet," with a view to determining the possible connection of malaria with mosquitos. We have reproduced these instructions in detail together with some other practical notes on the subject, but they are left over till next issue through want of space.

THE CONTAGION OF RINDERPEST.

IN February 1898, the Inspector-General of the Civil Veterinary Department was instructed to direct the conduct of experiments similar to those which had been undertaken by Professor

Koch in South Africa, to confirm the results obtained by that investigator as to the possibility of dried rinderpest matter conveying infection to living animals. Experiments accordingly have been conducted in parts of the country, including the hills and plains, by Veterinary-Majors Brodie, Mills and Raymond, of the Civil Veterinary Department, and Captain Rogers, officiating Imperial Bacteriologist, and the result of their investigations enables the Inspector-General to assure Government that there is no danger of rinderpest contagion being conveyed to other countries by means of bones and hides of animals exported to them. Captain Rogers we understand has succeeded in conveying *surra* from one horse to another by the agency of flies; details will be awaited with interest.

DECLINE OF PLAGUE.

THE plague deaths in all India for the week ending the 18th June had fallen to 523, a figure less than that of Bombay City alone three months ago. The Belgaum District now heads the list with 108 deaths, and were it not for this locality, Kohlapur, Poona and the Presidency city, the mortality returns would be in tens rather than in hundreds. The Madras Presidency and the Central Provinces show clean bills. The Hyderabad State has only eight deaths and the Punjab only one. In Bengal the week's total was seventeen, and the disease remained confined to Calcutta and the suburbs. The type of the disease, however, is as severe as at any period of the epidemic. Nearly every case admitted into the three municipal hospitals in Bombay died within three or four days after admission.

BANQUET TO SIR WILLIAM MACCORMAC, BART.

ON the evening of the 24th May, an interesting and successful dinner was given at the Café Royal, by the old House Surgeons of St. Thomas' Hospital between the years 1870—1894, to Sir William MacCormac, in honour of his third year of tenure of the office of President of the Royal College of Surgeons. Of the 128 gentlemen who have held office during Sir William's connection with the Hospital, no less than seventy-seven were present to do honour to their old teacher. Of the remainder, sixteen have died, twenty-two are resident abroad, and thirteen were unavoidably absent from various causes. Mr. G. C. Franklin, the senior old House Surgeon of the period, was in the chair, and the seats at the table were arranged in order of seniority. There were only two toasts, "The Queen and Royal Family" and "Our Guest." The latter toast was proposed by the Chairman supported by Mr. Makim, Dr. Ackland, and Dr. Nichol. It was received most enthusiastically and drunk.

with musical honours. Sir William, who was evidently deeply touched at the gratifying proof which had been afforded him of the regard and affection in which he is held by his old pupils, made a most happy speech, in reply. As is well known to his old dressers, Sir William keeps a book, in which he has recorded his opinion of the merits, or otherwise, of his old House Surgeons. Some allusions were made to this book in the course of the speeches, and the desire for a peep into its contents was expressed, but Sir William was not to be drawn. At the conclusion of the Chairman's speech an album containing a short address and the signature of those present was given to Sir William. Amongst several of Sir William's old House Surgeons who have entered the Indian Medical Service only one was able to be present.

CALCUTTA HOSPITALS.

COLONEL HENDLEY'S Report on the Calcutta Medical Institutions for 1898, shows that 123,567 men, 39,706 women and 47,977 children were treated as out-door and in-door patients during the year, as compared with 177,710 men, 48,981 women and 63,010 children treated in 1897, showing a total decrease of 78,511, which is attributed to the plague-scare having temporarily reduced the population for some months. The number of Europeans and Eurasians treated increased by 134 and 1,482 respectively, while that of Mohamedans and Hindus diminished by 25,933 and 52,303. It appears from Colonel Hendley's report that the attendance of female patients increases, as might be expected in India, in proportion to the privacy secured in the consulting rooms. The total number of beds available for in-door patients is 1,721, while the average number of beds occupied was 1,158. In Calcutta 259 per thousand of the population were treated as out-patients. The medical relief given in Calcutta compares favourably with that given in the large towns in England, though it is probable that, with better arrangements, more women would attend the hospitals. The death-rate for all the hospitals, excluding the Eye Infirmary, was 13·2 per cent. of the number of patients treated against 16·4 in the former year. Marked variations, depending on the class of patients admitted, occurred at the several institutions. Thus the death-rate for men was ·86 at the Police Hospital, 21 at the Campbell Hospital and 22 at the Howrah General Hospital. Similarly, in the case of adult women, the Dufferin Victoria Hospital shows a rate of ·76 and the Campbell Hospital of 30. There has been a considerable decrease in the death-rate of the Howrah General Hospital, due it is reported to the comparative healthiness of the district in 1898, and to the admission of fewer moribund persons. Small-pox was less prevalent during the year, and the number of patients

admitted into hospitals suffering from the disease fell from 218 to 37. With the exception of one case at the Mayo Native Hospital, the rest were treated at the Campbell Hospital. There was only one European admitted to the Campbell Hospital, against 41 in the previous year. Among those attacked, 23 were unprotected, and 11 of them, or 47·82 per cent., died. Of 10 persons who had been vaccinated, one died, but the marks of vaccination were very faint. The total death-rate was 32 against 30 in the previous year. The number of admissions for cholera decreased from 1,200 to 227, and the death-rate from 55 per cent. to 54 per cent. The decrease in admissions is most marked in the Campbell Hospital, where only 89 cases were treated against 535 in the previous year. Among the patients there were 17 Europeans and Eurasians, of whom 10 died, a ratio of 59 per cent. It is satisfactory to note that no case of cholera originated in any of the institutions during the year.

The surgical operations decreased from 25,745 to 21,610, owing to the falling off in the attendance of patients due to the plague-scare. Death followed in 154 cases, giving a percentage of ·71 against ·70 in the previous year. The largest number of operations was performed at the Medical College Hospital, where the death-rate was ·96 against ·78. The increase is attributed to a larger number of operations of a serious nature having been performed. Colonel Hendley proposes a change on the system of recording the surgical operations. In the Eden Hospital the number of women and children admitted as in-door patients decreased from 1,535 to 1,372. Of these, 200 were Europeans, 519 Eurasians, 582 Hindus and Mohamedans. The death-rate for Europeans and Eurasians is given as 5·14, and that for all others as 10·37, against 4·99 and 10·18 of the previous year. The death-rate for Native children fell from 33·64 to 25, although 8 children were admitted in a moribund condition. The number of confinement cases fell from 616 to 582, of which 18 were fatal as compared with 22 in the previous year. There were nine fatal cases of septicæmia, of which two originated within the hospitals. There were 1,104 operations performed, against 1,146 in the previous year. It is satisfactory to note that, of the 14 cases in which ovariectomy was performed, 11 proved successful.

The Lieutenant-Governor, in reviewing the report, is glad to notice that numerous improvements have been carried out at the several hospitals. Very large sums are being spent on the reconstruction and improvement of the Presidency General and Medical College Hospitals, which he does not doubt will greatly add to their efficiency and usefulness, but he is pleased to see that smaller matters do not escape the notice of Colonel Hendley, and that almost

everywhere little changes are being introduced, which do not cost much, and yet which all help to promote the comfort of the patients.

TROPICAL DISEASE TEACHING IN LONDON.

THIS extract of a letter from an Indian Medical Officer on furlough will be read with interest:—"I joined Manson's class at St. George's on tropical diseases. His lectures are very good and well illustrated by microscopic preparations. . . . The other day at the Branch Hospital, I saw crescent bodies, large plasmodia and flagellated bodies, the latter very lively and playing football with the red blood corpuscles. Seeing is believing with me, and I am a convert to Laveran's discovery from henceforth. In consequence of the row at the Seamen's Hospital, a new staff is being elected. Among the candidates are two of our men, Andrew Duncan and Oswald Baker (late of Rangoon). At St. Peter's the other day, for a litholapaxy case, they had three evacuators in good condition going one after the other, and nurses to clean and fill them. No wonder the washing out did not take long."

THE TEETH OF RECRUITS.

COLONEL DALBIAC's question addressed to the Under-Secretary for War as to "the number of recruits rejected during the past year on account of bad teeth, who were in every other respect fully up to the required standard," and the answer that the number under the heading "loss or decay of many teeth" was "1,767," require some analysis to bring out the true statistical significance of the figures. The report of the Inspector-General of Recruiting for 1898 shows, according to the *British Medical Journal*, that 66,501 recruits for the regular forces were medically inspected, so that 1 in 38 (nearly) were rejected on account of bad teeth. The total number rejected was 23,287, which gives about 75 per 1,000 on account of bad teeth. The total rejections, however, are divided in the report into two classes: (1) various ailments; (2) want of physical development, the former including all those rejected for purely medical reasons, the latter for those under military standard. Those under standard numbered 9,318, and those rejected for various ailments, 13,696; the first should be set aside, because, coming under the early part of the examination, they would be summarily rejected without reference to teeth; of the second, the proportion rejected on account of teeth works out at about 127 per 1,000. But none of these figures really show the actual numbers with bad teeth, which are no doubt very considerably more, because in the examination of recruits the first point is standard measurements, which, if

seriously defective, causes the summary rejection of the recruit without reference to teeth. As, however, the examination of teeth is usually about the last part of the medical inspection, those rejected for defective dentition, may be held to be fairly fit in other respects. The question of teeth in recruits is a difficult one, but is fairly met by a recent revised regulation giving examining medical officers a wide discretion. It is really astonishing how many fine muscular men there are of the recruits' age with poor and defective teeth. On the other hand, numbers of weedy men have fair teeth. It is not so much a question of the total number of teeth lost or decayed, but whether (including the wisdom teeth probably in young recruits still unset) there are left sufficient opposing molars for effective mastication. Beyond that it is neither desirable nor practicable to lay down hard-and-fast rules.

CARRIAGE OF PLAGUE CULTURES.

IN June of last year two cases of plague occurred on board the steamer *Carthage* on her voyage to Europe. The *Carthage* took as passenger a doctor who during the voyage intended to make experiments with what were supposed to be plague microbes. Acting on instructions from the medical authorities, the Government of India have issued orders that no plague microbes or cultures are to be taken on ship-board without a certificate from the Health Officer; it is also provided that packages are to be addressed to and intended for scientific purposes at some recognised constituted laboratory and must be secured in tins of adequate strength, hermetically sealed and labelled with such a distinguishing inscription as will suffice to make immediately manifest the nature of the contents.

MEDICAL PROGRESS IN SIAM.

IN a most interesting article a special correspondent in a recent issue of the *Times* records gratifying improvement in the general condition of the Siamese kingdom. The writer says that in Bangkok some attempt has been made at sanitation in deference to the persistent advice of English health officers; roads have been cut and trees planted; latrines have been put up and refuse collected; and improved hospital accommodation provided. But there is no water-supply, and in this great city of more than 400,000 inhabitants the people have to drink the polluted and often brackish river water. Thousands of lives are every year sacrificed to the Menam waters. There is a Belgian physician to the King of Siam, but the health officers are British. Progress, it is believed, would be more rapid

but for two chief causes (1) the multitude of advisers with which the King has surrounded himself, and (2) the masses of Asiatics who have been admitted to foreign protection.

THE Professorship of Pathology at the Calcutta Medical College, hitherto held by the Resident Physician of the College Hospital, in addition to his other duties, is created an independent professorship, as its importance demanded. The professor will also be the Official Bacteriologist to the Government of Bengal.

THE fund raised to commemorate the untimely death from plague of Major Evans, I.M.S., is already, we understand, sufficient to secure a suitable tablet as well as to found a small prize in pathology at the Medical College, Calcutta.

LT.-COLONEL C. WARDEN, I.M.S., lately Medical Store-keeper, Calcutta, has been appointed to succeed the late Dr. Macnamara, as Inspector of Stores at the India Office.

THE fungus for the extermination of locusts, referred to in our last number, is to be obtained from Captain Rogers, I.M.S., Imperial Bacteriologist, Muktesar, Kumaon Hills.

Reviews.

Glaucoma: its Symptoms, Varieties, Pathology and Treatment.—By ALEX. W. STIRLING, M.D., C.M. (Ed) D.Ph. (Lond.), late Ophthalmic Surgeon, Post Graduate Medical School and Hospital, New York, &c, Atlanta, Georgia. St. Louis: JONES H. PARKER, 1898. 8vo., pp. 177.

THE author states that the contents of this volume were put together in great part in connection with his lectures to the students of the Post-Graduate Medical School of New York. They were published serially in the *Annals of Ophthalmology* and are now reproduced in book-form. This statement prepares one for what the book is, *viz.*, a good *resumé* of all that is known of glaucoma at the present time. The various theories elaborated to account for the disease are fully and fairly discussed, the author himself regarding all the symptoms as explainable by the increased tension, and adopting Priestley Smith's views on its etiology. No mention is made of Abadie's theory or of his operation on the cervical sympathetic for the relief of glaucoma. Dr. Stirling carried out a series of examinations in the laboratory at Moorfields in 1893 on the condition of the vortex veins and

the choroid in twenty eyes enucleated for glaucoma, and gives an epitome of his results in Chapter VII. In only three of the cases was anything abnormal found in the veins in the shape of inflammatory changes in the walls of the vessels. In eleven of the 20 cases the choroid showed inflammatory patches. As regards treatment, Treacher Collins' iridectomy dialysis is advocated in preference to all other operations. A good feature of the work is the bibliography at the end of each chapter. The 77 illustrations from micro-photographs are but indifferent. The book forms a useful summary of our present knowledge of glaucoma.

The Principles which Govern Treatment in Diseases and Disorders of the Heart.—By Sir RICHARD DOUGLAS POWELL, *Bart.*, M.D., F.R.C.P. London: H. K. LEWIS, 1899. (Price 6s.)

THIS handily little volume contains the Lumleian Lectures for 1898 by Sir Douglas Powell. It is an eminently practical work. It begins with a lecture on heart-diseases among that difficult class of patients, the neurotic. The account of angina pectoris is specially good. It is pointed out that "in a large proportion of cases angina pectoris is an entirely functional disorder, the main feature of which is sudden increase of blood pressure and a corresponding sudden call upon cardiac effort; it may be on the systemic, it may be on the pulmonary, side of the circulation that the strain arises" (p. 23). The pain, "which is to a great extent the measure of the strain upon the heart," is to be met by remedies which relax arterial spasm, *e.g.*, amyl. nitrate, or nitro-glycerine (1 m. of a 1 per cent. sol.) given at intervals of five minutes for 4 or 5 doses, with an appropriate cardiac stimulant, *e.g.*, slowly sipped hot water.

Lecture II deals with acute inflammatory conditions of the heart and insists upon the great value of rest in rheumatic heart affections. The salicylic treatment is the best, but because this drug has removed the fever and pain, it does not mean that the patient can get up. *Thirty days' rest in bed are essential.* The portion of the lecture devoted to the value and use of digitalis (which our author prefers to strophanthus) is most valuable but too long to quote here. He points out that the *one indication for its use* is "symptoms of commencing failure of the left ventricle to respond to the heavy call upon it." An occasional mercurial will sometimes prevent the sickness that too often supervenes upon treatment with digitalis, or digitaline hypodermically can be given.

Lecture III deals with the question of exercises in heart-disease, graduated walks, brine baths, &c., which have been so fashionable of late years. He gives much practical advice as to the use of the Schott's treatment as carried out at Nauheim.

Oertel's treatment of graduated walking exercise with a dietary restricted in fluids is also described, but Sir Douglas Powell considers that "the swing of the pendulum is tending, perhaps too much, towards exercise." The same lecture contains an admirable account of the proper treatment of acute heart failure, which is best seen in pneumonia. It is in the latter stages, when the lungs are consolidated and exhaustion is present, that acute heart failure is apt to supervene, "a running pulse, œdema of the unconsolidated portion of the lung producing that ominous tracheal rattle, these are the signs of heart failure threatening life." The two symptoms leading especially to heart failure are, a temperature over 104°F. and sleeplessness. The failure generally comes on suddenly. At this time dilute phosphoric acid with digitalis or strophanthus and strychnine should be given, but the most powerful remedy is oxygen. For the sleeplessness of pneumonia give sulphonal 10 or 20 grains *in hot fluid* at 9 P.M. followed by potass. bromide (gr. 20) an hour or so later. If temperature is high, phenacetin (gr. 7) may be added to the bromide, or if delirium is marked give hyoscin ($\frac{1}{80}$ gr.) subcutaneously. Persistent sleeplessness almost invariably proves fatal. We have not space to quote from the description of the irritable heart, of cardiac overstrain, especially in the young, nor the account given of infective endocarditis and its treatment by anti-streptococcic serum and yeast-nuclein.

The book is well got up and reflects credit on the well-known publishers.

An American Text-Book of Gynæcology, Medical and Surgical, for Practitioners and Students.—By Ten of the Leading Gynæcologists of America. Edited by J. M. BALDY, M.D. Second Edition, Revised. Philadelphia: W. B. SAUNDERS, 1898. (Price 6\$.)

WE welcome with pleasure the second and revised edition of this well-known text-book. The very rapid improvements in methods and details in gynæcology have necessitated the addition of new material and the elimination and modification of some old matter. The work contains eighteen chapters written by ten eminent American teachers of gynæcology.

The first chapter is devoted to the physical examination of the female pelvic organs, and is fairly complete. We are glad to observe that the author raises a word of warning against the use of the sound for diagnosis when the desired information can be obtained by other means. Apparently, Barnes' modified crescent speculum is not used in America, as no mention is made of it in this chapter, but it is very largely used in this country for diagnostic purposes. We also fail to find any mention of the very useful dilators of Hegar or Duncan for the rapid dilatation of the cervix.

The technique of gynæcological operations is treated in the next chapter, which has consequently been enlarged, but this has relieved the body of the book from constant repetitions. Figs. 26 and 27, intended to represent the opening of the peritoneum and the method of enlarging the abdominal incision, respectively, are extremely indistinct and uninstrucive. Whereas most of the other illustrations are excellent and form an attractive feature of the book.

The writer of the chapter on menstruation and its anomalies makes his personality known by his peculiar style. The treatment of amenorrhœa is given fully. Indigo has been credited as a therapeutic agent of much value in this condition, amongst the other drugs noted, seneca might have been mentioned. In very severe cases of uterine hæmorrhage (in menorrhagia), the author advises "cording the arms and legs close to the body:" the rationale of such procedure being, that by such means large volumes of blood will be kept in the extremities for a sufficient length of time to permit clotting of blood in the openings of blood-vessels within the uterus. Such a procedure seems to us less desirable than some of the more and direct methods at our disposal. In describing the symptoms of dysmenorrhœa, the author mentions the importance of the identification of "Valleix's painful points" to facilitate diagnosis; but no description or explanation of this term is given to enlighten the uninitiated reader.

Sterility in the female is said to "imply an inability to bring forth a living child." Though the author tries to explain himself further on, this definition is open to criticism. The next four chapters are devoted to anomalies of the generative organs, genital tuberculosis, diseases of vulva and vagina and inflammatory diseases of the uterus, and they are good.

The operations for lacerations of the soft parts are treated very fully. The gynæcologist is interested more with the secondary perineorrhaphy. In this connection we cannot refrain remarking why the admirable and eminently successful operation of Lawson Tait is not described. The principle of flap-splitting has been adopted by almost all operators of the present day, but Tait's method of applying sutures deserves recognition. Genital fistulæ receive consideration in a chapter. A very simple operation is described for vesico-vaginal fistula, leading the student to suppose that the performance of the operation is very simple; but the final paragraph of the chapter is sufficient to warn him. These operations for the cure of genital fistulæ are the most delicate and difficult in plastic surgery, and are not to be attempted lightly. The author does not mention those cases of very large fistulæ with destruction of vagina, cervix, &c., where it is impossible to attempt to close

the fistula, and the only way by which it is possible to give comparative comfort to the patient is by the operation of colpoecleisis.

The chapter on distortions and malpositions, is very good indeed. We notice, however, that the epithelium of the endometrium is referred to as melting off during menstruation; and in pathological antifixion, as coming away in blocks and threads. Recent histological investigations have very definitely proved that no desquamative changes in the endometrium take place during this physiological process. This is also referred to in the chapter on menstruation and its anomalies. In the chapter on malignant diseases of the genitalia, deciduoma malignum does not find a place.

The various operations of hysterectomy are especially well described and illustrated. The illustrations of the extraperitoneal treatment of the stump after supravaginal hysterectomy deserve special commendation. The chapters on pelvic inflammation and ectopic gestation are very complete. Diseases of the ovaries, including tubal anomalies and broad ligament cysts, receive a proper amount of attention. The chapter on the diseases of the urethra and ureters have been rewritten and brought thoroughly up to date. The concluding chapter is on the after-treatment of gynaecological operations and is thoroughly practical.

The book is profusely illustrated with 341 blocks, prints and 38 coloured and half-tone plates. They are all very good, with the exceptions above specified. The index is full. Altogether we commend this work as one of the most complete and up-to-date works on practical gynaecology.

Current Literature.

MEDICINE.

Malta Fever Treated by Antitoxin.—Drs. Fitzgerald and Ewart give (*Lancet*, April 15th, 1899) an interesting case of Malta fever treated by its antitoxin. An officer invalided home after three months' Malta fever came under their charge at Folkestone; all forms of treatment had failed; the patient suggested antitoxin which he had heard of. This was obtained from the laboratory at Netley. The temperature rose sharply after each injection of 20 cub. cents. of the serum, and an urticarial rash appeared; the joints became swollen; there was cough and expectoration. These grave reaction symptoms gradually subsided, and the patient got well and completely rid of all Malta fever symptoms, and remained well.

[This is the first report I have seen of the antitoxin treatment of Malta or undulant fever. Possibly, it has been used in Malta and at Netley, but reports have not yet reached the medical press.]

In the *New York Medical Journal* (February 25th, 1899), Dr. C. P. McNabb reports two cases of **Epidemic Cerebro-Spinal Fever** treated by anti-streptococcic

serum. The first case was very severe, and a slow recovery followed. The second patient died. McNabb thinks the anti-streptococcic serum has a decidedly stimulant effect upon the nerve centres in meningitic coma. It probably increases phagocytosis and prevents purulent infection of the exudate. He has hopes that an anti-meningitic serum can be produced.

Cancer as a Parasitic Disease.—The Special Cancer number of the *Practitioner* (April 1899) is an admirable *résumé* of present day knowledge of this subject. Plimmer (Pathologist to St. Mary's Hospital, London) gives an account of his recent work on the ætiology of the disease. He claims that cancer is a chronic infectious disease running the course and presenting the lesions of chronic infectious diseases. He gives full details of the *technique* necessary to demonstrate what he claims to be parasites, but which others have held to be only cell degenerations. The parasites are very small round bodies there is a central nucleus-like portion, around this is a layer of protoplasm, and outside this a capsule. The protoplasm stains less deeply than the nucleus. The capsule is a well-marked structure. The method of multiplication is by division; the nucleus becomes oval, then divides into two parts; these soon become equal and separate; then the capsule throws in septa from either side between the divided nucleus, which meet; then they separate from each other and become two separate individuals. There have been many experiments to reproduce the disease in animals by placing pieces of cancer in parts of the body, generally with negative results. Cancer in animals is, however, a rare disease, though Fadean gives in same issue (p. 458) 49 cases of carcinomata in dogs, horses and oxen. Sonfelice [*Zeitschrift für Hygiene* 1899] and Roncali have isolated organisms from cancers, which have had pathogenic properties, and which have also produced tumours in certain animals. Plimmer's own similar experiments by placing pieces of human cancer in various animals have not been successful, but he has cultivated the organisms found in cancers, and has in 13 guinea-pigs produced tumours by these organisms isolated from human cancer. Plimmer sums up his work as follows:—(1) There are certain intracellular bodies in cancers, which are not degenerative, which are found only in cancer, and these bodies have distinctive micro-chemical reactions. (2) In some cancers these bodies are present in enormous numbers. (3) They can be cultivated outside the body. (4) These cultures, when introduced into certain animals, can cause death with the production of tumours (so far of *endothelial* origin except on the cornea, the epithelium of which proliferates considerably), and pure cultures can be made from these tumours which, if inoculated into suitable animals, will again produce similar growths. Professor Wright of Netley has confirmed many of Plimmer's observations and experiments.

In reply to the question, "Is cancer actually contagious?" Roswell Park of New York, says yes, and quotes cases in proof, *e.g.*, a woman got cancer of the finger while caring for a cancerous cow. Jurgens gives a case of cancer of the thumb caught from epithelioma of a fowl. Budd gave the case of a dog which got cancer from licking the cancerous lip of his master. A London surgeon got cancer of tongue from having taken into his mouth some discharge from a cancerous breast. Guélliot collected 28 cases of transmission to husbands of cancer from wives affected with uterine cancer. A French surgeon got cancer after a wound while operating on a cancerous patient. Another physician got cancer from inoculation of an acne pustule. Park concludes that cancer is unmistakably a parasitic, *i.e.*, an infectious, disease.

Bland Sutton (*Evolution and Disease*) said that cancers were very rare among natives of India, &c. Is this so? Cancers are common enough in our big hospitals. Can any one give information on this point?

The Treatment of Syphilis.—The New York Academy of Medicine has lately occupied itself with the subject of syphilis, and the *New York Medical Journal* (April 8th, 1899) has several valuable articles on the subject. R. W. Taylor of Columbia University, New York, believes that the best results are attained when treatment is begun just as soon as *secondary* manifestations show themselves. He believes that it is "removing the cutting edge of our most powerful weapon" to administer mercury to a system not fully charged with the virus. He does not begin with inunction, as it may disgust or annoy the patient, but at first gives pills of the protoiodine or of the tannate of Hg. (half grain doses thrice daily); the dose may be slightly increased (up to grs. 3 daily in a few days). When the rash begins to decline give inunction for some days. After fifteen or twenty inunctions (60 grains each), give a rest for fully three or four weeks; at this time change of air will be useful. During the mercurial course the patient should have a couple of warm baths or Turkish baths, weekly, to produce diaphoresis. After this Taylor recommends iodide of potash, which should not be delayed too long. He gives from 10 to 30 grains, thrice daily, or even larger doses, or in some cases a mixture of perchloride of Hg. with iodide of potash. In this way we can push on till six months have elapsed from commencement of secondaries; by this time "the backbone of the disease has been broken."

The patient may then have a respite of three or four weeks, then commence again inunctions or the mixture as above. During the second year more courses of inunctions are advisable, say for eight months, at intervals out of the second year. After two and a half years of such thorough treatment the patient may marry with impunity.

In the tertiary period Bolton Bangs (*loc. cit.*, p. 480) says: Mercury should be administered, but in combination with increasing doses of the iodide. Bangs, however, recommends excision of the primary chancre, and he does not agree with Taylor, but commences mercurial treatment at once. He prefers treatment by the mouth at first, interrupting it, however, after a time for the use of inunctions. In certain malignant forms, hypodermic injections of the perchloride may be given with prompt effect. The condition of the glands of the body is the most important guide in treatment; so long as the glands remain enlarged the treatment must be continued. Treatment for at least three years, says Bangs, affords the patient protection for life.

As regards the diagnosis of syphilitic lesions, the same journal has an editorial on the *use of blue glass* as an aid in the diagnosis of the cutaneous lesions. Lenses of cobalt blue glass are used, with a diffused light. What is aimed at is the absorption of those rays of harmful light which fatigue the retina without bringing to its notice any essential features, *e.g.*, the red rays. Broca claims the following results:—(1) the perception of an eruption before it is visible to the naked eye; (2) the displaying of traces of former eruptions; (3) the revelation of a latent eruption.

Justus [Virchows' Archiv., vol. 148 (1887), p. 533, quoted in *Boston Medical and Surgical Journal*, April 6th, 1899] has introduced a *new test for diagnosis* of doubtful cases of syphilis, *e.g.*, the diagnosis of a syphilitic or tubercula lesion of larynx. The test depends upon the sensitiveness of the red blood corpuscles in syphilitics to the action of mercury. This is shown by a sudden **sharp fall in the percentage of hæmoglobin** during the hours immediately following the administration of the drug. A sharp fall of 10 to 20 per cent. in the hæmoglobin has been observed by Justus in over 300 cases of syphilis; there is no such fall in non-syphilitic cases. The sign was observed in all untreated cases of secondary tertiary, or congenital forms of the disease. Cabot and Mertins of Harvard have tested and proved the above conclusions.

The U. S. Army Ration.—The food-supply of the American troops in Cuba has deservedly come in for severe criticism. An admirable article by Dr. L. L. Seaman (*New York Medical Journal*, March 25th, 1899) discusses the rations issued for tropical service. Hundreds of serious cases of gastrointestinal catarrh and fever rapidly developed. The food acted as a continual exsistant; it consisted of fatty bacon, salt beef, canned tomatoes (frequently in a state of fermentation) canned beans and "hard-tack" (hard bread). The effect of this ration is seen "in the emaciated forms of the convalescents or buried in the soil of our new possessions." Seventy-five per cent. of all the troops suffered from an acute intestinal catarrh. Afterwards typhoid and malaria were rife. The fresh beef issued was usually tainted or "embalmed" as the soldiers called it. Seaman quotes Andrew Duncan's account of the ill effects of the salt ration in our first Burmese War where 48 per cent perished from scorbutic dysentery. Dr. Seaman recommends that farinaceous food should be supplied in view of one-half of the fresh or salt-meat; that the salt-meat should not be issued more than twice a week; that an hominy or rice ration be issued, with plenty of fresh vegetables, *not* canned beans. Great attention will need to be paid to the cooking, which is not good in the U. S. regiments. In view of the above, it is amusing to read the official pronouncement of the Special Commission that "*no improvement on this ration can be suggested!*"

W. J. BUCHANAN, B.A., M.B.

SPECIAL SENSES.

Massage of the Tonsils.—Kantorowicz has found that he can reduce hypertrophied tonsils to normal size by massage with the finger for a few minutes. He introduces his forefinger, protected by a rubber cot, as far as possible behind the tonsil and rubs fifteen to twenty times with his finger around it, and then up and down the same number of times. The massage, repeated about fourteen times, reduces even the most inflamed and swollen tonsils to normal. He concludes (*Deutsche Med. Ztg.*, 1898, No. 63) by calling attention to the frequent coincidence of carious teeth with hypertrophied tonsils; in 75 cases of bilateral hypertrophy he counted 296 teeth affected with caries, and in 24 unilateral cases, 101, suggesting that better care of the teeth might reduce the number of cases of hypertrophied tonsils.—(*Journal of American Medical Sciences*, 4th March 1899.)

Eversion of Ventricle of Larynx.—Dr. Tugals, of Chicago, relates a case of this disease (*Journal of American Medical Association*, 18th February 1899) in a man aged thirty-nine accompanied by a cyst involving the larynx and side of the neck. There was difficulty in speaking and a cystic tumour about 1½ inch diameter just below angle of jaw on the right side. The swelling had twice, in the few preceding years, been opened and pus had escaped. There was no cough, but some dyspnoea on exertion. Voice was a coarse whisper. Pressure almost dissipated the tumour, but it immediately returned on removal of the pressure. During the pressure the patient was unable to speak. The fauces were congested. There was bulging of the right side of the base of the tongue, crowding somewhat against the epiglottis. The swelling was ½ inch diameter, was cyst-like in appearance, and extended downward at the right side of the larynx, pushing the epiglottis inwards and causing bulging of the ventricular band so as to completely hide the left cord and a part of the left side of the larynx on attempted phonation. An exploring syringe proved it to

be a cyst, and two ounces of thick mucilaginous semi-transparent fluid drawn off emptied it. An injection of three-quarters of a drachm of a mixture of equal parts of carbolic acid and glycerine was made. The injection was allowed to remain several minutes worked about well, and then removed. No smarting followed and reaction was moderate. Immediately afterwards the voice was very much improved, and peculiar vibration previously present from vibration of the epiglottis had disappeared. Upon examination, however, it was found that, although the cystic tumour in the base of the tongue, and at the side of the larynx had disappeared, there was a smooth reddish tumour $\frac{5}{8}$ " \times $\frac{3}{8}$ ", projecting from the right side of the larynx just above the vocal cord. This was demonstrated to be a prolapsed ventricle. After some difficulty the everted ventricle was cut off close by means of a wired polypos snare. Recovery was complete and uneventful.

Ear vertigo and its relief by removal of the incus.—Dr. Charles H. Burnett (*American Journal of the Medical Sciences*, April 1899) publishes further observations on the mechanism and paroxysmal nature of "chronic tympanic vertigo" as he calls it, and its cure by removal of the incus. All forms of ear vertigo are usually and indiscriminately called "ménière's disease." The latter is indeed ear vertigo, but ear vertigo is not "ménière's disease." The term "ménière's disease" if it means anything definitely, means internal ear vertigo, due to apoplectic lesion of the labyrinth of the internal ear; but there is little or no evidence that such lesions ever occur in the internal ear without previous catarrhal disease in the middle ear, the capillary blood-vessels of which are intimately connected with those of the internal ear. Middle ear vertigo or tympanic vertigo is due primarily to chronic catarrhal disease in the tympanic cavity, and the consequently altered condition and mechanism of the ossicles of hearing. External ear vertigo is due to disease in the external ear. All of these three forms of vertigo present very similar symptoms, termed ménière's symptoms, viz., more or less deafness and tinnitus, with paroxysmal vertigo, nausea, vomiting, reeling, and often falling, but no loss of consciousness. This last differentiates between ear vertigo and epilepsy, alcoholism and apoplexy, with all of which ear vertigo is sometimes confounded.

Ear vertigo is due to irritation emanating from some part of the auditory apparatus and conveyed through the ampullæ of the semi-circular canals to the motor filaments of the auditory nerve, the peduncles and the cerebellum, disturbing coordination, and so causing vertigo. Such irritation may be excited by undue retraction and impaction of the stapes in the oval window with compression of the labyrinth fluid, as in the late stages of chronic catarrhal otitis media. The paroxysmal nature of ear vertigo can be explained only by assuming that it is due to temporary increase in retraction and impaction of the stapes in the oval window on temporary engorgement of the labyrinth from within, without compensatory yielding of the stapes, and a consequent pressure on the labyrinth water and the ampullæ. That this is the mechanism of ear vertigo is demonstrated, Dr. Burnett considers, by the curative effect of removal of the incus and liberation of the stapes. In twenty-seven cases of ear vertigo in which he thus liberated the stapes, entire freedom from incapacitating attacks of ear vertigo has followed the operation. This relief has not always come at once, as long a time as six months having elapsed in some instances before entire relief has been obtained; but in some of the worst cases, immediate relief has followed the removal of the incus. In a few cases the tinnitus has been entirely relieved, and in the rest of the cases greatly diminished by the operation. The hearing, uniformly very defective in true ear vertigo, has been uninfluenced by this operation. The technique of the operation is, briefly, as follows:—The patient

being under ether, the external auditory canal is sterilized with formalin solution (1 in 1000), and illuminated by an electric head lamp. A long incision is made in the posterior periphery of the membrane, beginning behind the short process of the hammer, and running almost halfway around the membrane. The incus-stapes joint is thus well-exposed. The incus is then detached from the stapes by Dr. Burnett's incus hook-knife, drawn downwards into the atrium, and removed by slender foreign-body forceps (Sexton's pattern). In the case narrated, the ready mobility of the stapes, which was demonstrated at the operation by means of a probe, rendered the patient specially liable to an attack of vertigo from a sudden retraction of the ossicles by the tensor tympani, impaction of the stapes upon the over-distended labyrinth, and consequent undue compression of the ampullæ. Such liability was overcome by the removal of the incus, and the consequent destruction of the retractive power of the tensor tympani and malleus upon the stapes.

Massage for Asthenopia.—Pagenstecher observes that the treatment of diminished functions of the eye, with normal or nearly normal vision, is difficult and complicated. Tenotomy and "darkness cures" are seldom needed. Careful examination, glasses and local treatment of the conjunctiva are important, but the remedies used must not be too powerful. Massage is most important of all. The points to be massaged are the bulbus, the lids, and the nerves emerging from the orbit, particularly the supra-orbitalis. A large number of cases have been cured with massage alone due to neuralgia (reflex) or to circumscribed sensitiveness of the ciliary body, also asthenopia caused by defective tension in one eye or by resections of the ocular muscles. Slight paresis of the ocular muscles can also determine asthenopia. Reflex asthenopia may be caused by affections of the nose or frontal sinus. Treating the general health proves frequently of the greatest importance. Relapses may occur even after the most brilliant successes. (*Munich Med. Woch.*, December 20, 1898.)

Localisation of Intra-cranial Tumours.—(*Brain*, Autumn, 1898). At a discussion of the Neurological Society of London on this subject, Marcus Gunn alluded first to the fact of the very great frequency of optic neuritis in tumour, pointing out that in order of such frequency tumours of the cerebellum come first, then of the basal ganglia, then of the occipital, frontal, and temporo-sphenoidal lobes. He considers that the circumstances which chiefly contribute to its onset and severity are rapid growth, increase of cerebro-spinal fluid, and basal meningitis, these accounting for its particular disposition to occur in cases of cerebellar tumour. It is now well known that a certain type of neuritis, in which there is development of a stellate figure at the macula resembling that seen in albuminuric retinitis, is almost invariably a sign of cerebellar growth. He thinks it quite possible that unilateroneuritis or unilateral excess of neuritis may help in the localisation, though the mere presence of neuritis is of no localising value. Briefly put, his view is that the farther forward a new growth is, the greater probability is there that the neuritis may be either unilateral or at least worse on the same side. Thus there seems more likelihood that a tumour of the right frontal lobe may cause a right-sided neuritis than an occipital tumour, and certainly than a cerebellar one. As another possibility he suggests that minor anatomical differences in the orbit and its contents may predispose, and propound the idea, also worthy of investigation, that differences in the refraction of the eyes may cause a difference, real or apparent, in the degree of ophthalmoscopic change. (*Ophthalmic Review*, February, 1899.)

Correspondence.

RICKETS IN INDIA AND BURMA.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I have noticed, in one or two of your issues lately, references to the extreme rarity or absence of Rickets in India. The February number says: "It has never yet been satisfactorily explained."

In a practice of over five years in this place, I have met quite a large number of cases which have been diagnosed as Rickets. When well developed, they show prominent parietal eminence, unclosed fontanelle at two and three years, beads on the costo-chondral articulations (though these are but slightly marked), pot-belly and enlarged spleen (nearly every child has an enlarged spleen here), enlarged epiphyses at the wrist, offensive diarrhoea and sweating about the head. They yield promptly to codliver oil. We have about sixteen orphans taken at birth or a few weeks after, and at twelve to eighteen months nearly all begin to emaciate, and recover on taking codliver oil.

I have seen no cases of Rickets above six or seven years, but explain this fact by supposing that they die before they reach that age.

From figures which I have collected, it appears that 60 per cent. of all the children born here die before twelve years of age. What with small-pox, measles, malaria, and convulsions, together with the lack of intelligent care most children receive among the Shans, a child's chance for life if suffering from Rickets seems very small.

Where is the difference between the Shan States and India? May it not be that *ghee* is unknown here and the food woefully lacking in all fats, except vegetable oils. I do not know enough about the conditions of life in India to do more than make this suggestion. The habit of suckling children until 2½ or 3 years prevails here to some extent.

A. B. MISSION,
Mone, S. Shan States, Burma: }
1st June 1899.

A. H. HENDERSON.

WANTED MOSQUITOS.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I am at present employing my leisure, while on furlough, in making a compilation of the known species of mosquitos, with the view to the identification of the species incriminated in the transmission of malaria. As far as I can make out, only two species stand recorded from India, up to the present time, so that it is obvious that these insects have as yet been scarcely studied at all in that country, for it may be taken as certain that the true number of species is much nearer fifty. I should much like to include some of these unknown species in the forthcoming catalogue, and so shall be greatly obliged to any of your readers who will be good enough to send me any specimens they can catch.

The best way of sending them is to regularly pin them as entomologists do, a full description of the method being obtainable from Mr. Auston of the British Museum.

Failing this, however, they may be packed, a few of each species together, in the small tubes in which specimens of medicinal tabloids are sent out by druggists' firms.

No spirit or other fluid preservative should be used, as the delicate colours are quite altered by such agents, and, above all things, no cotton-wool should be inserted in the tubes, as the legs become hairy in the females; and it is well, wherever possible, to send both sexes of each species. When resting on a wall or window, mosquitos may often be easily caught by cautiously slipping a small bottle or tube over them, into the bottom of which has been wedged a small wad of blotting-paper, on which is dropped a little chloroform; but the surer plan is to use a light butterfly net, and to transfer them from this to a tube, prepared as above, held in the hand introduced into the net. The tubes should be packed in a box with plenty of cotton-wool and sent by post. Major Ross' splendid investigations were unfortunately interrupted by the exigencies of the service, on the occasion when, some two years ago, he succeeded in infecting mosquitos with human malaria, and in his more recent work, when on special duty, he has not been able to again find this species; but he tells me that, like the species forming the intermediate host for avian

malaria, it was a small, dark tinted species with "dappled" wings, so though all species will be most gratefully received, species answering to that description are specially interesting. Trusting that the importance of the subject may serve as a sufficient apology for my request.

BYFIELD, MANNAMHEAD,
PLYMOUTH, DEVON: }
9th May 1899.

G. M. GILES,
Major, I.M.S.

WHAT IS THE "HILL FEVER OF MYSORE AND DECCAN"?

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Can any of your readers give any information as to the nature of what has been called the "Hill Fever" of Mysore and the Deccan? In reading an account of malaria* recently, I came across the following: "The hill fever of Mysore occurs among bare rocks, stones and brown earth, at the hottest season from March to June, when the rocks in the sun show a surface temperature of 220°F. and rapidly cool after sunset." A similar fever (malaria) is said to prevail near the bare rocks of a cataract on the river Orinoko, where there is great absorption of heat and rapid radiation. Does this fever still prevail in the hot season in the Deccan, &c.? Is it malarial? How does the mosquito theory apply here?

DARJEELING,
16th June 1899.

W. J. BUCHANAN,
Capt., M.B., I.M.S.

Service Notes.

NEW REGULATIONS FOR INDIAN SUBORDINATE MEDICAL DEPARTMENT.

WITH the approval of the Right Honourable the Secretary of State for India, the Government of India sanction the following changes in the conditions of service of the Warrant Officers of the Indian Subordinate Medical Department with effect from the 1st of April 1899:—

1. The existing grade of 3rd class assistant surgeon is abolished and the service will be divided into four classes as shown below:—

	Old designations. (Grades.)	New designations. (Classes.)	Corresponding Rank.	Pay. Rs.
1st class	Above 5 years' service	1st class	Conductor	200
	Under 5	2nd class		150
	Above 5	3rd class		110
2nd class	Under 5		Sub-Conductor	
3rd class		4th class		85

Note.—Compensation for quarters, furlough pay, half-pay, pensions, etc., of the new classes will be according to the allowances at present authorised for the corresponding former grades.

2. Subject to good conduct and efficiency and in the case of third class assistant surgeon the passing of an examination also, as detailed in para. 3, a service of five years in the fourth class and of seven in the third and second classes respectively shall entitle an assistant surgeon to promotion to the next higher class.

3. Third class assistant surgeons will, before being eligible for promotion, be required to pass an examination in surgery, practice of medicine, materia medica, hygiene, midwifery and acquaintance with the regulations which govern military hospitals, at any time before the end of the twelfth year of service. No allowance on any account, including that of field service, will be made for failure to pass this examination which will be held annually under the orders of the Director-General, Indian Medical Service, who may, on the advice of the examiners, remand a candidate to his studies for any period not exceeding two years.

4. (a) The assistant surgeons in the service on the 1st April 1899 (excluding those who have been specially promoted, degraded or passed over for promotion during their service) will be

* *Encycl. Brit. Art. Malaria.*

classified from 1st April 1899, according to their length of service as follows:—

Those under five years' service will be graded in the fourth class; Those of five and under twelve years' service will be graded in the third class;

Those of twelve and under nineteen years' service will be graded in the second class;

Those of nineteen years' service and over will be graded in the first class; and their rank in their new class will in like manner be fixed according to the date of their warrant rank. Thus an assistant surgeon who entered the service on the 1st August 1886, will be placed in the second class and will rank from the 1st August 1898.

(b) An assistant surgeon, who has been specially promoted, degraded, or passed over for promotion during his service will be placed in the same class as, and immediately below, the assistant surgeon next above him in his present grade whose promotion has been normal and the date of his rank in his new class shall be the same as that of a normal assistant surgeon and in his subsequent promotion he shall (unless again specially promoted, degraded or passed over for promotion) be treated according to paras. two and three above as if his entry into the class occurred on such date.

(c) All promotions made under para. 4 (a) into the first and second classes shall be subject to the condition that the assistant surgeons so promoted shall, if not already qualified, qualify within two years in accordance with para. 3 above.

TWENTY-EIGHT Civil Surgeoncies in the various provinces have now been reserved for Civil Assistant Surgeons: in Bengal, seven; in Madras, five; in the North-West Provinces and Burma, four; in Bombay and the Punjab, three; and in the Central Provinces, two. The complete arrangement will be gradually carried out.

UNDER instructions from the Secretary of State for War, it is notified that the unvaccinated wife or family of a soldier cannot be allowed to be brought into contact with the troops or with other families of soldiers in such a way as to jeopardise their health. The unvaccinated wife or family in such a case would, therefore, not be allowed to live in barracks, nor would they be conveyed to any foreign station at the public expense.

THE Secretary of State has sanctioned the appointment of a Personal Assistant in lieu of a Secretary to the Surgeon-General with the Bombay Government. The pay of the appointment is to be Rs. 600 per mensem, with Presidency house rent, but no private practice will be allowed.

MRS. HENDLEY, wife of the Civil Surgeon of Simla, commenced on the 23rd ultimo a series of lectures on hygiene for the benefit of Simla girls at the rooms of the Young Women's Christian Association there.

AMONGST the new Fellows of the Royal Society is Major David Bruce, R.A.M.C., who is a graduate of medicine of the University of Edinburgh. He was the first, in the year 1887, to successfully isolate and cultivate the micro-organism of Malta fever, the micrococcus Melitensis.

THE Government of India has consented to an extension of Surgeon-General Sibthorpe's service until the matter of the choice of a successor has been decided by the Secretary of State.

Gazette Notifications.

GOVERNMENT OF INDIA.

MILITARY.

Colonel CHARLTON, R.A.M.C., Principal Medical Officer in Sirhind, proceeds home on transfer.

Captain WRIGHT, 3rd Infantry, Hyderabad Contingent, officiates in medical charge of the 3rd Lancers, Hyderabad Contingent.

Lieutenant FLEMING, I. M. S., is appointed to the medical charge of the 1st Infantry, Hyderabad Contingent.

Colonel C. W. ... is confirmed in the appointment of Commissioner, Assam, from the ... retired.

The services of ... I.M.S. (Bengal), are placed temporarily at the disposal of the Government of the N.-W. P. and Oudh.

Colonel A. SCOTT REID, M.B., I.M.S. (Bengal), is appointed to be Administrative Medical Officer and Sanitary Commissioner of the Central Provinces, with effect from the 19th May 1899.

Lieutenant-Colonel C. H. BEATSON, I. M. S., 10th Bengal Lancers, is appointed Principal Medical Officer, Kohat-Kurram Force, vice Lieutenant-Colonel A. S. REID, I. M. S., transferred to civil employment.

Major F. J. DOYLE, Indian Medical Service, from the medical charge of the 1st Infantry, Hyderabad Contingent, to the medical charge of the regiment, vice Lieutenant-Colonel C. MALLINS, Indian Medical Service, retired.

Lieutenant-Colonel BARROW, R.A.M.C., officiates as Principal Medical Officer, Sirhind District, vice CHARLTON, transferred to the home establishment.

The Commander-in-Chief in India is pleased to sanction an exchange of places on the roster of Indian Service between the undermentioned officers of the Royal Army Medical Corps:—Captain L. A. MITCHELL, Captain B. W. LONONURST, Major M. W. KERIN and Major C. T. BLACKWELL.

Lieutenant-Colonel CHARLES THOMAS PETERS, M.B., I.M.S., Bombay, Civil Surgeon, Belgium, Deputy Sanitary Commissioner, Southern Registration Districts, is permitted to retire from the service from the 24th June 1899, subject to Her Majesty's approval.

CIVIL.

The services of the following officers of the Royal Army Medical Corps have been lent to Government for employment on plague duty:—Majors DEANE and RANDON, and Captain FARMER at Calcutta; Lieutenant MARRIOTT at Bombay, and Captain JACKSON at Karachi. Captain KANGA, I. M. S., is also deputed to Bombay.

BURMA.

On relief by Lieutenant-Colonel G. T. THOMAS, I.M.S., Captain F. J. DEWEES, I.M.S., from Rangoon to the civil medical charge of the Toungoo District, in place of Major C. N. BENSLEY, I.M.S., proceeding on leave. On relief duty Lieutenant-Colonel S. H. DANTRA, I.M.S., Major A. R. P. RUSSELL, I.M.S., from Mandalay to the civil medical charge of the Myingyan District, in place of Captain T. STONART, I.M.S., transferred to the civil medical charge of the Bhamo district, in place of Assistant Surgeon J. DOLBY, proceeding on privilege leave.

Captain E. R. ROST, I.M.S., is appointed to the medical charge of the civil station, Maymyo, with effect from the 6th March 1899. He held charge of his duties from the 6th to the 27th March 1899, both days inclusive.

With effect from the 28th March 1899, Captain C. R. PEARCE, M.B., C.M., I.M.S., is appointed to the medical charge of the civil station, Maymyo, in place of Captain ROST, I.M.S.

BENGAL.

Captain A. R. S. ANDERSON, I.M.S., is appointed to act as Civil Surgeon of Chittagong.

The services of Major H. D. ROWAN, R.A.M.C., are placed temporarily at the disposal of the Sanitary Commissioner, Bengal, for employment on plague inspection work.

Major J. G. JORDAN, I.M.S., has been granted an extension of furlough for two months on medical certificate.

Dr. G. J. BLACKMORE is appointed temporarily to act as Civil Medical Officer of Ranchi.

Lieutenant-Colonel J. FRENCH MULLEN, I.M.S., is appointed to act with effect from the 26th March 1899, to act as Civil Medical Officer of Ranchi, during the absence, on leave, of I.M.S.

Captain J. C. B. STATHAM, R.A.M.C., is appointed to act as Inspecting Medical Officer at the Plague Observation Camp at Chowra.

Captain B. C. OLDHAM, I.M.S., Officiating Second Resident Surgeon, Presidency General Hospital, Calcutta, is allowed furlough for twelve months, from the 2nd April 1899.

Captain E. A. R. NEWMAN, I.M.S., is appointed from the 2nd April 1899, to act as Second Resident Surgeon, Presidency General Hospital, during the absence of I.M.S.

Captain W. W. ... is appointed as Sanitary Commissioner, during the absence, on deputation, of Captain R. H. MADDOX, I.M.S.

Captain W. W. CLEMESHA, I.M.S., Officiating Deputy Sanitary Commissioner Metropolitan and Eastern Bengal Circle, to be an Assistant Health Officer of the Port of Calcutta, in addition to his own duties.

BOMBAY.

Captain C. T. HUDSON, I.M.S., acting Civil Surgeon, Nasik, holds charge of the office of Deputy Sanitary Commissioner, Western Registration District, in addition to his own duties, during the absence, on leave, of Major A. V. ANDERSON, M.B., I.M.S.

PUNJAB.

Captain J. STEPHENSON, I.M.S., made over charge of the duties of Superintendent of the Bannu Jail to Lieutenant C. H. WATSON, I.M.S., on the 17th April 1899.

Lieutenant C. H. WATSON, I.M.S., made over charge of the duties of Superintendent of the Bannu Jail to Captain F. R. OZZARD, I.M.S., on the 22nd April 1899.

Lieutenant H. AINSWORTH, I.M.S., assumed charge of the Civil Medical duties of Kurram on the afternoon the 7th May 1899, relieving Captain T. A. GRANGER.

On being relieved of the duties of Plague Medical Officer, Jullundur, Captain H. SMITH, I.M.S., Officiating Civil Surgeon, assumed civil medical charge of the Jullundur District on the forenoon of the 26th May of 1899, relieving Captain A. COLEMAN, I.M.S., transferred.

Captain A. COLEMAN, I.M.S., Civil Surgeon, from the Jullundur to the Umballa District, where he assumed charge of his duties on the forenoon of the 27th May 1899, relieving Assistant Surgeon KRISHN CHAND.

Senior Assistant Surgeon RAI SARIB SOBHA RAM, Officiating Civil Surgeon, Gurgaon, is transferred in the same capacity to Karnal, where he assumed charge of his duties on the forenoon of the 8th May 1899, relieving Major H. M. MORRIS, I.M.S., proceeded on leave.

Lieutenant C. H. WATSON, I.M.S., assumed charge of the civil, medical duties of Dera Ismail Khan, on the forenoon of the 1st June 1899, relieving Captain P. ST. C. MORE, I.M.S.

THERAPEUTIC NOTES.

An Ointment for Sciatica.—The *Riforma medica* (New York Medical Journal) gives the following formulas:—

R Oil of turpentine,	} each ...	5 parts.
Oil of gelsemium,		
White wax ...	...	2 "
Simple ointment ...	...	40 "

M. To be applied to the painful part.

A Pill for Dysmenorrhœa, the Menorrhagia of Puberty, and Uterine Atony.—

R Iron and ammonium	} each ...	1 drachm.
citrate,		
Powdered ergot,	} ...	a sufficiency.
Extract of kola		

M. Divide into fifty pills, to be silver-coated. From two to six to be taken daily at the menstrual periods.

An Application for Excessive Sweating of the Hands.—

R Boric acid	...	5 parts.
Borax,	} each ...	15 "
Salicylic acid,		
Glycerin,	} each ...	60 "
Dilute alcohol,		

M. To be rubbed on three times a day.

A Tooth Powder for Children.—Monti's formula is given as follows in the *Dental Review* for March:

R Magnesium carbonate	...	75 grains.
White Chalk,	} each ...	225 "
Sodium salicylate,		
Oil of peppermint	...	6 drops.

M.

A Mouth Wash for Children.—The *Dental Review* for March ascribes the following formula to Monti:

R Boric acid	...	3 parts.
Distilled water	...	200 "
Tincture of myrrh	...	2 "

M.

The Treatment of Alveolar Abscess.—Viau is credited in the *Riforma medica* with the following formula:

R Salol,	} each ...	4 parts.
Menthol,		
Chloroform	...	3 "
Distilled water	...	100 "

M. Rinse the mouth with the solution several times a day. Apply the following to the gum of the affected tooth:

R Tincture of iodine,	} each ...	4 parts.
Tincture of aconite,		
Chloroform,	} each ...	1 part.
Tincture of benzoin,		

Coffee-flavored Cod-liver Oil.—

R Cod-liver oil	...	6,000 grains.
Powdered coffee	...	300 "
Animal charcoal	...	150 "

Heat to 140° F. in a covered vessel, allow it to remain for five days from time to time, and strain it.

Ergot and quinine in labor.—The *Medical Journal* concludes as follows:—labor, but, should postpartum labor doses; (2) Ergot is useful in repeated small doses when abortion is threatened, hemorrhage occurring without pains, and the os uteri being closed. Further, it is useful in small doses in cases of subinvolution of the uterus; (3) Quinine, 8 grains, followed by 4 grains in an hour, and repeated after another hour, if required, should be given, whenever there is delay in labor due to exhaustion of the uterine muscle, provided the delay is not caused by obstruction in the passages or deviation from the normal in the fetus.

Alopecia Areata.—In this form of baldness, Dr. Duhring recommends the following stimulating lotion, applied daily, either in its full strength or diluted.

R Tinct. cantharidis,	} ...	1½ ounces.
" capsici		
Ol. ricini	...	2 drms.
Spt. lavandulæ	} ...	a.a. ½ ounce.
" rosmarini		

—Philadelphia Medical News.

To keep Mosquitos Alive.—On this subject Dr. Manson writes:—"Dr. Bancroft, of Burpengary, Brisbane, Australia, who is at present experimenting with mosquitos and blood parasites, in a recent letter informs me that mosquitos can be kept alive after feeding once on human blood, by suspending in the vessel in which the insects are confined a fresh ripe banana. The banana should have the skin partially removed, and be renewed every fourth or fifth day. In this way the insects can be kept alive for upwards of six weeks. This is a fact which the many observers now at work on the mosquito-malaria theory will be glad to know of."

A supplementary note is contributed by C. V. Creagh, C.M.G., late Governor of North Borneo, who says:—"In reference to Dr. Manson's letter on this subject in the *British Medical Journal* of April 1st, I would recommend those interested in mosquito-keeping to feed the insects on sherry and sugar. After trying banana, lychee, raw meat, syrup, and many other things, I discovered that this mixture not only kept them alive, but made them remarkably fat and healthy."

"In studying the life-history of different species of mosquitos in Hong-Kong, Perak, and North Borneo, I have successfully used it for several years. The mixture consisted of about a saltspoonful of dry sherry and an equal quantity of brown sugar and was changed every two or three days. A small quantity of water should also be supplied, in a separate vessel, to keep the insects in good condition, and I know of nothing better for confining them than an inverted finger glass. This should be placed on a piece of coarse flannel lint or similar material, to afford ventilation, under the rim of the glass, and exclude ants."

"Investigators of the mosquito-malaria theory may be interested to learn that many species of mosquitos (if not all of them) refuse to feed on human blood for some days (about six or generally eight) after emerging from the larva. I discovered this by inserting the tip of my fourth finger through a small hole in the paper, on which I placed the inverted finger-glass during these experiments. When twelve or thirteen days old, however, the presence of the finger tip invariably caused great commotion amongst all the female members of the family, who quickly discovered it, and feasted ravenously. The males are not blood suckers, but I have kept them for weeks in good condition on sherry and sugar."

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

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Notes on Malaria. By Major E. M. Wilson, R.A.M.C.

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Original Articles.

SCARLATINA IN INDIA.

By

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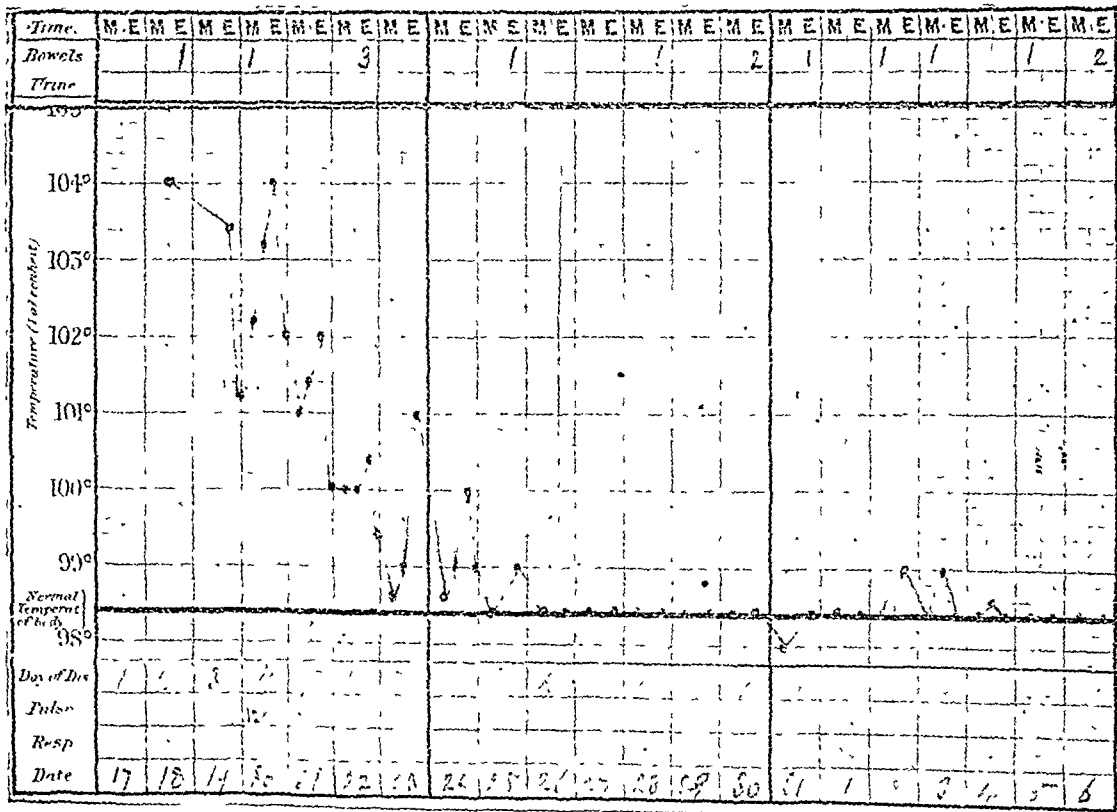
Member of the Clinical & Medical Officer of Health,
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London.

Two cases of a disease simulating scarlatina very closely having come under our notice, we have thought fit to record them in view of the freely expressed opinion that scarlatina is unknown in India, except in a few instances where it has been directly imported from Europe.

Both these cases occurred in the European Female Orphan Asylum, 79, Lower Circular Road, Calcutta. This institution was founded in 1815, and the occupants are girls who have

servants living and sleeping in out-buildings on the premises. Two punkha coolies come in from outside during the hot weather to work by day and two *mehtrani ayahs* who come daily to sweep; these latter bring their children with them, and they in no way come in contact with the European inmates.

The buildings consist of a central block of two floors, facing east, and a detached wing, facing south, situated at the north-east angle of the main building and at right angles to it. The ground-floor of this wing is occupied by a chapel, and the upper floor is used as an isolation ward when required. Both floors are united by covered ways to the main building, these ways being freely open to the air. The buildings are kept scrupulously clean. The water-supply is excellent, and the surface drains are periodically overhauled. There are no sewer connections. The milk-supply is good, the cows being kept on the premises in a large airy, well-drained byre. All milk is boiled before consumption, and the food is carefully inspected by the Sisters every day. As a general rule, the health of the inmates is excellent.



lost either father or mother or both parents. The majority of the children are of pure European parentage, and with very few exceptions have been born and bred in India.

The Asylum is superintended by two Sisters of the Order of St. John the Baptist, Clewer. When full it contains 52 children. The building stands in a large compound, the grounds being very well kept. There are 15 native male

CASE I—Kate N., aged 6; born in India; living at the European Female Orphan Asylum, Calcutta. Previous health always good. On the morning of the 17th January, 1894, was attacked with fever and sore throat and was put to bed. On the 18th January she was seen by the medical officer of the Asylum. She had then a temperature of 104°. Her throat was sore, the fauces and tonsils being reddened. Tongue coated with a white fur with the fungiform papillae showing through. Conjunctivae were congested, and the skin of the neck, chest, abdomen and flexures of the elbows were covered with a

bright red, diffused rash which disappeared on pressure only to return when the pressure was removed. The urine was examined and found to contain $\frac{1}{2}$ albumen on settling after boiling. Dr. William Coulter of this city saw the child and pronounced the clinical characters to be those of scarlatina and advised immediate isolation. As the isolation ward was not available, arrangements were made to send the child to the European General Hospital, where she went next day. A dose of castor-oil was ordered meanwhile.

For the further history of this case, we are indebted to Major H. W. Pilgrim, I.M.S., the Superintendent of the Hospital, who kindly placed the notes at our disposal.

On the 19th January, on admission to hospital, temperature 103.4, skin warm, pulse frequent. The body studded with minute spots of scarlet hue; was given a diaphoretic mixture every three hours and a gargle of boracic acid to be used frequently. The lungs, liver and spleen were pronounced normal.

20th Jany.—Slept well; tongue dry; pulse 120°. There was an ulcer on the right tonsil and general congestion of the throat and enlargement of the cervical glands. Skin still red. The urine slightly acid, sp. gr. 1014. Albumen, *nil*. The temperature rose to 104° in the afternoon, when two grains of phenacetin were given. Diet—Milk, 2 pints; chicken broth, 1 pint.

21st Jany.—Temp 101° at 6 A.M. Tongue still dry; papillæ enlarged. Fauces congested; no pain on swallowing. Rash fading on the legs. Temp. 102° at 6 P.M. Tinct. aconite m. i given with the diaphoretic mixture every three hours, and a gargle of chlorate of potash used. Took. nourishment well.

22nd Jany.—Temp. 100° at midnight. Rash fading on chest and abdomen. Throat less congested and less painful. Urine sp. gr. 1010; acid. Albumen, *nil*. Highest temp. 101°. Bowels open three times to-day. Treatment continued.

23rd Jany.—Temp. 98.6° at 6 A.M. Rash faded everywhere. Branny desquamation on face, abdomen and sides. Complaints of itchiness. Throat much better; gland in neck smaller. No albumen found in the urine. The body was washed with 1 in 40 carbolic lotion. Temp. 101° at 6 P.M.

24th Jany.—Temp. 98.6° at 6 A.M., and rose only to 100° at 6 P.M. Branny desquamation of back. Congestion of throat very slight. Carbolic oil to be rubbed on the skin.

25th Jany.—Temp. normal, rising to 99° at 6 P.M. Skin peeling off in patches, the size of a pea. Bowels once moved. No albumen in urine. Treatment continued.

26th Jany.—Temp. normal all day. Desquamation continued. Glands under the chin still enlarged. Treatment continued.

27th Jany.—Temp. normal. Urine free from albumen. Mixture omitted.

28th Jany.—Temp. normal. Throat all right. Still desquamating. Diet increased. Tongue cleaning at tip only.

She continued to improve from this date. The skin of the hands peeled off on the 6th February. Temperature remained normal except for trifling rises to 99° on February 2nd and 3rd. The enlargement of the tonsils slowly subsided. Desquamation continued on the hands and feet until the 18th February. On the 4th February she was given a tonic mixture of iron and quinine and improved steadily. She was discharged quite well on the 21st February.

Shortly after this patient was taken ill, three other inmates of the Asylum developed simple sore throats, without fever or rash of any kind;

they were isolated for a while, and in a few days allowed to return to their every-day occupations.

On the 19th January, the drains of the Asylum were thoroughly overhauled by the Corporation Sanitary Authorities and pronounced in good order. The cow byre was inspected, and as several of the cows and calves were covered with an impetiginous eruption on the skin of the neck and groin, Dr. W. J. Simpson, who was then Medical Officer of Health, made cultures from the skins of these animals on January 24th; but although a coccus was obtained, the results were not very definite.

The strictest enquiries were made as to possible infection from outside, but without result. Of the friends who visited the Asylum, none had come in contact with any cases of fever and sore throat. No parcels had been received from Europe, and very few letters, none in fact from households where scarlatina had been treated.

CASE II.—Gertrude M., aged 13; born and bred in the plains of India; both parents European, now deceased. Brothers and sisters healthy. Has been in the Asylum five years. Previous health excellent. On the morning of 2nd June 1899, she complained of feeling ill. At 6 P.M., she went to the Sister in charge and said the roof of her mouth and throat were sore. Temperature 103°. She was at once put into the isolation ward.

On June 3rd, temp. ranged between 103° and 104° all day. The skin of the neck, back and arms was of a bright red colour. As the bowels were costive, castor-oil was given.

4th June.—Temp. ranged from 103.6° to 105°. Bowels acted very freely. She was seen by one of us. There was a bright-red generally diffused rash all over the trunk, face and limbs, fading on pressure and returning when the pressure was removed. Fauces and uvula were acutely inflamed, as were the tonsils, which were much enlarged and covered with small patches of grey, sloughing mucous membrane. The tongue was coated white, with the fungiform papillæ showing through, giving it the typical strawberry appearance. Conjunctivæ were congested, and there was much headache. Pulse, 120, and was full and bounding. Respiration, 40. Nothing abnormal was discovered in the heart, lungs, liver or spleen. Urine sp. gr. 1024; acid, scanty, high coloured, and contained $\frac{1}{4}$ albumen on settling after boiling. A gargle of Condyl was ordered, and a mixture containing chlorate of potash, quinine and perchloride of iron, to be given every three hours. Diet—Milk, 2 pints; chicken soup, 1 pint.

5th June.—Temp. ranged from 103.6° to 104.6°. She slept badly. The bowels acted once scantily in the morning. Headache very severe. Rash and sore throat *in statu quo*. An aperient of Gregory's powder was given in the evening.

6th June.—Slept fitfully. Temp. varied from 102° to 104.4°. Rash fading. Fine branny desquamation observed on the chest and back, fronts of the arms and the abdomen. She was seen by us both to-day and cultures were taken from the throat and from the desquamating skin. We were both agreed that the clinical aspect was that of true scarlatina. The patient was ordered to be soaped all over twice daily and sponged with warm phenyle and water. Mixture to be given every four hours.

7th June.—Slept better. Rash fading. Desquamation abundant. Temp. 102.7° to 104.4°. Headache less. Tongue cleaning. Throat less painful; sloughs on tonsils cleaning off. Urine acid, sp. gr. 1018, still high coloured containing alb. a trace. Took her nourishment

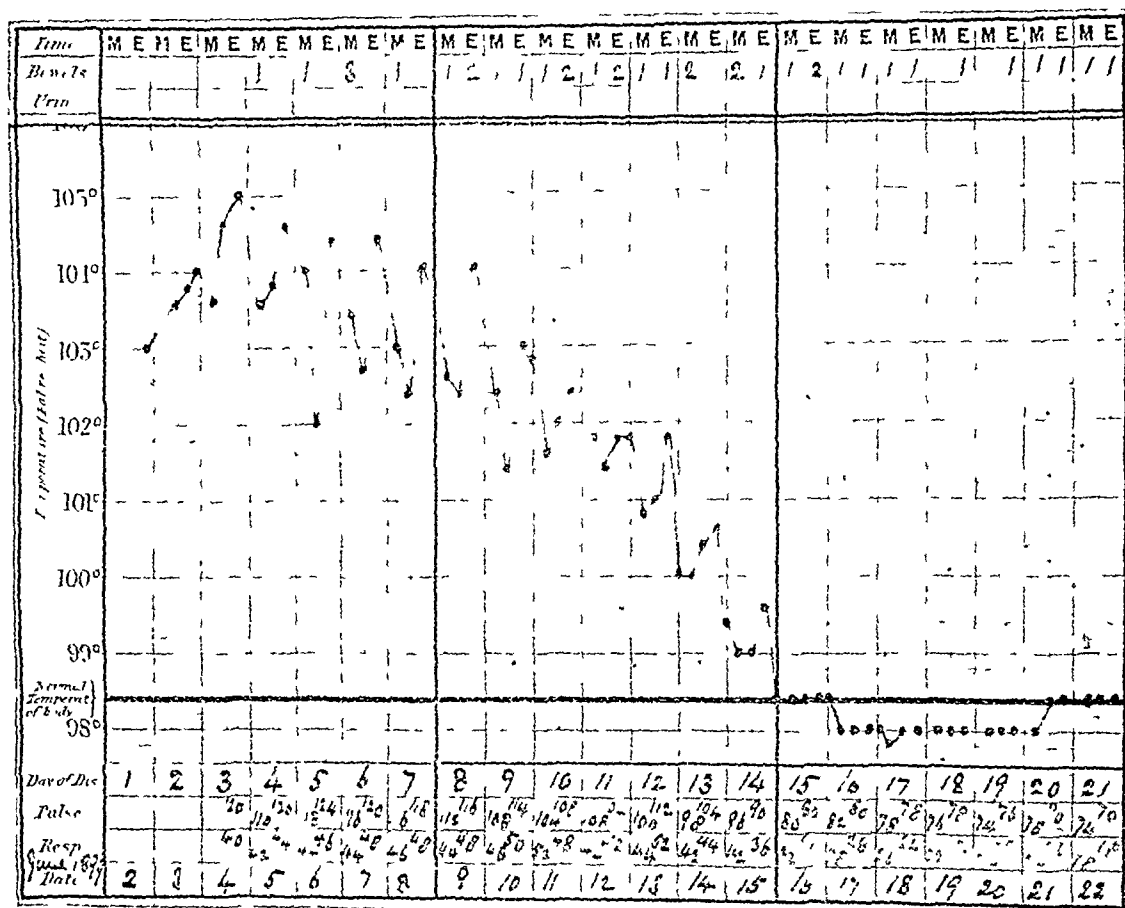
well. Mixture to be given every six hours. Bowels require a daily dose of Gregory's powder.

8th June.—Slept badly and woke complaining of rheumatic-like pains in the hands, feet and forearms, which got worse in the evening. These pains were relieved by fomentations. Temp. varied from 102.4° to 104°. Pulse rapid and small 118. Respiration rapid. Lungs normal and heart sounds clear. One ounce of port wine to be given daily.

9th June.—Pains in limbs very bad last night, especially in right upper arm and shoulder. Temp 102.4° to 104°. Pulse rapid but stronger. Tongue quite clean. Desquamation beginning round fingers and toes. Throat still inflamed. To take mixture thrice daily, and two ounces of port wine in 24 hours.

24th June.—Temp. normal. Desquamating on palms and soles and buttocks, and upper arms. Feeling stronger. Sleeps well. To have ordinary diet, and port wine one ounce only. To remain in bed and be bathed twice daily.

26th June.—We both visited the patient and took cultures from the throat and the skin. As the patient was anxious to save her hair, we recommended having it well-rubbed daily with carbolic oil 10%. The rest of the skin was still to be bathed with warm phenyle and water twice daily after a thorough scouring with soap. Following the advice of Dr. W. H. Dickinson, of London, we have not oiled the skin of the body as is so often done, because in Dr. Dickinson's opinion such treatment predisposes to nephritis by hindering the action of the skin.



10th June.—Slept better. Pains in limbs less. Throat much better. Temp. 101.4° to 103°. A mixture of sp. amon. atom., potass citrat. and liq. amon. acet. to be given every four hours. Taking her food well. After to-day bowels open daily without any aperient.

11th June.—Temp. gradually coming down. Fingers tremulous. Pulse small. Respiration rapid 52. Lungs quite clear. Uric acid, sp gr. 1015. Albumen, nil.

13th June.—Temp falling gradually day by day. Desquamation in large flakes off the dorsum of the feet. Mixture, gargle, port wine and phenyle baths continued. Appetite is improving.

15th June.—Temp. fell to normal to-day. Throat much less inflamed. Skin peeling off palms and soles. Mixture to be omitted.

18th June.—Skin peeling in large flakes off palms and soles. Right tonsil only still a little red. Urine sp. gr. 1010; acid. Albumen, nil. Gargle, port wine, and baths continued. Is having chicken pish-pash and milk puddings.

20th June.—Temp. sub-normal. Still desquamating. Throat normal.

As the patient was lying in bed, there was not much chance of scales of skin being carried about.

1st July.—Patient doing well, and still lying in bed. Desquamation had ceased except on the points of the heels. As we had obtained streptococcus from the cultures we made on the 26th ultimo, the patient was ordered to be bathed twice daily with a weak solution of creolin and hydrochloric acid.

4th July.—Cultures taken from scrapings of the skin of the right heel and back of right upper arm. Cultures also taken from right tonsil.

8th July.—Was quite well. She continued bathing twice daily for one week more and then returned to her ordinary life.

11th July.—Isolation ward disinfected with the Equifex sprayer and an acid sublimate solution. All bedding and clothes disinfected with superheated steam.

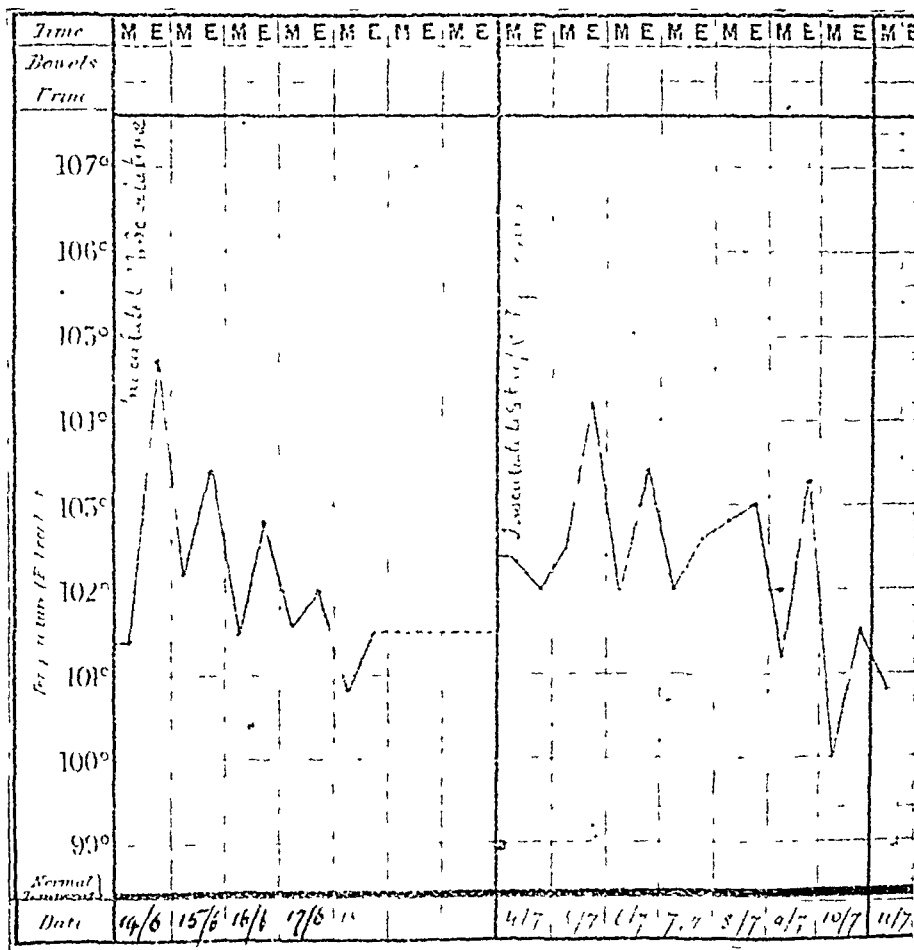
In this case we instituted most careful enquiries with a view to eliciting a history of possible outside infection. No cases have been

heard of amongst the families of friends living in Calcutta, and who visit the occupants twice a month. No cases either have occurred among the troops in Fort William, Barrackpore and Dum-Dum. Since the 1st April 1899, the occupants of the Orphan Asylum have received only five letters and two parcels from the United Kingdom, and no one of these has come from a house where there has been a history of scarlatina or sore throat. As regards communication by post with the rest of India, during the same period one parcel and one letter were received from the South Lancashire Regiment quartered at Jabalpur. Lieutenant-Colonel W. R. Quayle, I.M.S., however, wrote to us on July 1st, saying

These two young friends live in a large healthy house in Chowringhee and form part of a large household of European adults and children, besides the usual contingent of native servants. Careful enquiry has failed to elicit a history of sore throat or fever in any member of this household, and the two children in question have kept perfect health for a long time past.

The cows were carefully examined by us, and nothing abnormal was discovered. We were informed that they had not been out of the compound for several months, and no new cows had been brought in by the cow-keeper.

We now give some account of our bacteriological investigation and of the experiments car-



no cases resembling scarlatina had been seen in the station of Jabalpur, nor among the troops quartered there.

The patient herself personally has received no letters or parcels. This second patient has remained within the Orphan Asylum compound for some months and has had no friends come to see her from outside. However, on the 27th May last, she was visited at the Asylum by two friends, a boy and a girl, aged 10 and 7 respectively. They all three played with one another and were seen running about arm-in-arm.

ried out by us in connection with the second case.

6th June 1899.—Cultures made on agar from skin and throat of Gertrude M.

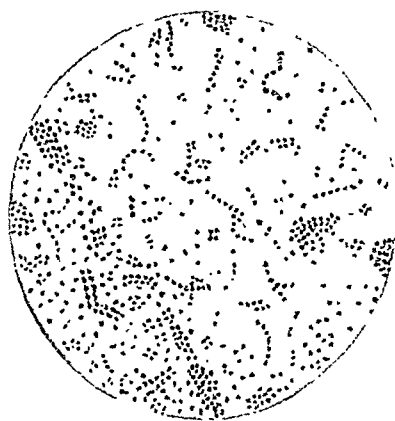
8th June 1899.—Small colonies surrounding the particles of epidermis on the surface of the agar slope which, when transferred by streak culture, showed a yellowish white slightly raised streak with a somewhat broken border. Smear preparations showed cocci in short chains, and clumps in which they grew in a square formation. The cultures from the throat showed two growths, one diplococcus pneumoniae of Weich-

selbaum; the other a coccus similar to that obtained from the skin.

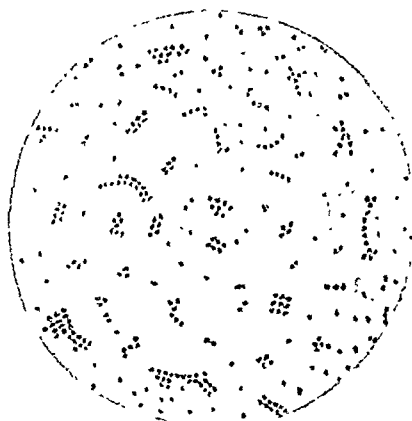
14th June 1899.—In the morning, two young bull calves were inoculated in the left saphena vein on the inside of the thigh with 2 c. c., each of a 20 hours' bouillon culture (1) from the throat streptococcus; (2) from the skin streptococcus. In the evening their temperatures were 104.7°

were so overgrown with a variety of bacteria that they were not persevered with. From the scaly papules on the neck of calf No. II, which had originally been inoculated with the streptococcus obtained from the skin of the girl, a streptococcus was obtained identical in appearance with that inoculated (*vide* Plate I).

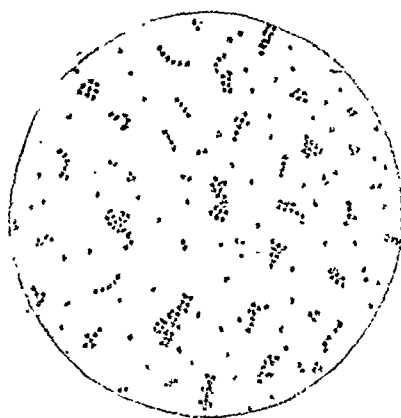
26th June 1899.—Cultures made from the



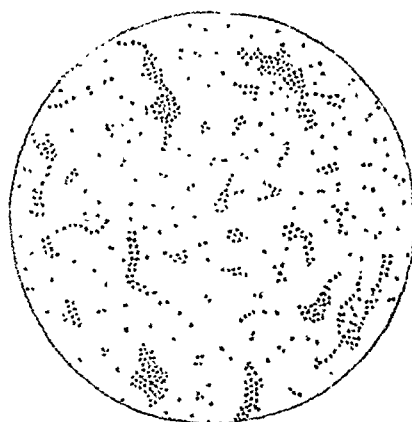
I
FROM SKIN OF CALF.



II
FROM SKIN OF GIRL.



III
FROM THROAT OF GIRL.



IV
FROM CARBUNCLE.

and 104.8°. Both calves suffered from a distinct febrile attack lasting about 5 days, *vide* Temperature Charts. In calf No. 2, which was inoculated with the skin streptococcus, there was a general papular eruption which commenced two days after inoculation and spread over the neck, chest, flanks and abdomen. The spots were about half the size of a two-anna piece, denuded of hair and scabby. No. 1 had a few spots which came out rather later, but nothing like so general an eruptive attack. Neither of the calves had any local reaction at the seat of inoculation. They both had dry muzzles and staring coats. They lost flesh and appeared less lively than usual.

Cultures were made from the blood of both calves obtained by pricking the muzzle, but

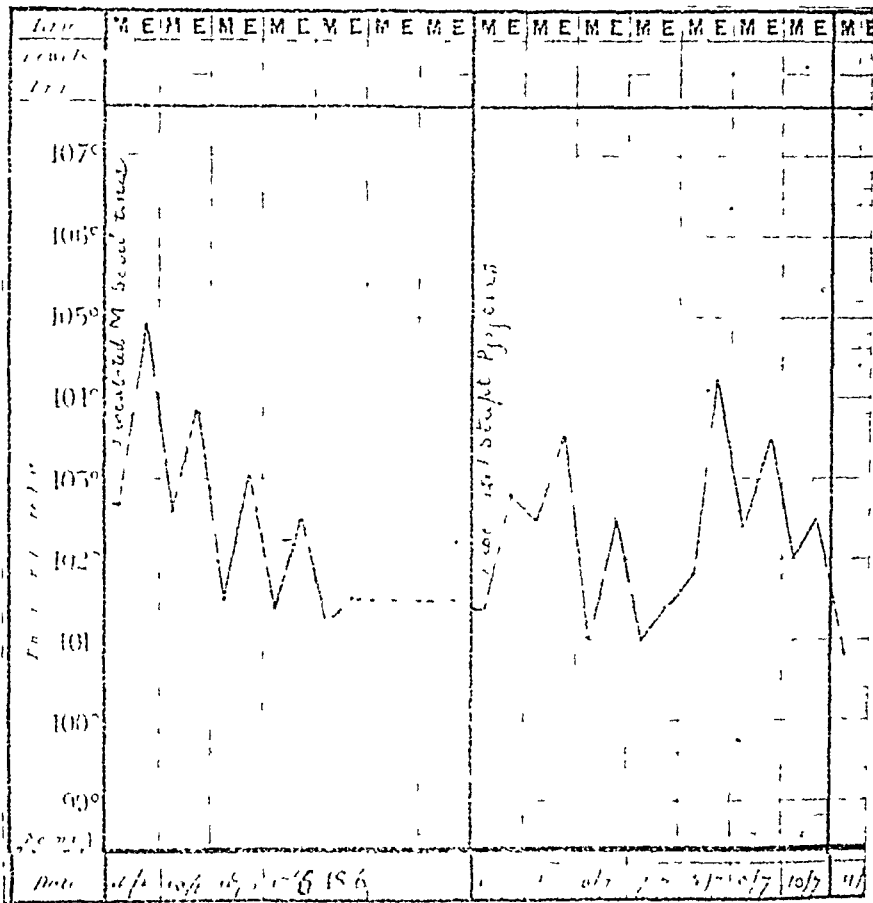
throat and skin of the patient showed cocci in single and double chains, and clumps very similar of those previously obtained from the patient and the inoculated calf, though her skin had been washed twice daily with disinfectants for three weeks.

For the purpose of comparison, cultures were made from a sloughing bubo, a convalescent case of erysipelas and a suppurating carbuncle, and an assortment of septic cocci was obtained. Plate IV shows a streptococcus obtained from the carbuncle which was the most like the coccus obtained from the patient and calf No. II, but smaller, though cultivated for the same length of time on the same medium at the same temperature.

4th July 1899.—Both calves were inoculated in the right saphena vein in the thigh with 2 c.c.

each of a 20 hours' bouillon culture of streptococcus pyogenes obtained from the carbuncle. They were both unwell after the injection, but the temperature as shown in the chart was less regular than after the former inoculation. But the most noticeable difference was that, whereas after the first inoculation neither of them had any perceptible local reaction, after the second each of them had a painful swelling at the seat of inoculation and could not put his foot to the ground. For three days they spent most of their time lying down, and if compelled to walk went mostly on three legs. They were also much emaciated. After that the swelling gradually cleared up without suppuration.

Disease, from which eruption a similar streptococcus was obtained, and further that this streptococcus differed from streptococcus pyogenes in the fever it produced and still more in producing no local reaction, points strongly to the conclusion that the streptococcus we obtained was the streptococcus scarlatinae and no other streptococcus, and as a corollary, that the case of the patient from whom it was derived was a case of true scarlatina and no other disease closely simulating it in the clinical symptoms. At the same time we are well aware that a single experiment is not conclusive, and consider it desirable that further experiments should be undertaken to confirm the result we obtained



4th July 1899.—Cultures were again made from the throat and skin of the patient, and streptococci were obtained from both, though they were much more mixed up with other bacteria than had been the case on the former occasions.

4th July 1899.—Cultures from throat and skin showed streptococci as before.

The fact of our getting a streptococcus in almost pure culture from the throat and skin of the patient, which on inoculation into calves produced a febrile attack of definite duration, and in one case, at least, an eruption appearing on the second day, and answering to the descriptions of Klein and Power of the so-called Hendon

or prove it to have been merely a curious chain of coincidence. As a matter of speculation, we think it probable that at the time of the first case appearing in the Female Orphan Asylum the cows were suffering from Hendon Disease, though the streptococcus was not successfully isolated, and that the infection may have remained somewhere in the place ever since. The fact of no general outbreak occurring, if this hypothesis is correct, can only be attributed to the low infective power the contagium appears to possess in tropical countries.

We have carefully examined the literature on the subject of scarlatina in India with a view

to giving a *resumé* of all cases published as having occurred in this country since 1871, and quoting the opinion of those who have written on the subject in the same period.

A case of scarlatina was reported in May 1870 as having been seen in Simla, and with a view to placing the occurrence of true scarlatina in India in a definite position, the Editors of the *Indian Medical Gazette* addressed a circular to all medical men practising in Calcutta, calling for an expression of their opinions and a statement of their experience on the subject. A summary of the replies was published in October 1871. As a result of their enquiries the Editors thus summarised:—"Scarlet fever does occur in India in European communities, either as an isolated case or a limited outbreak. It does not appear to show any great tendency to spread, and in all cases there is demonstration or a strong suspicion of its importation into this country from Europe. There is not a jot of evidence that the disease is indigenous or has ever occurred among the natives of the country. As far as Calcutta is concerned, the evidence now adduced confirms our original assertion. The disease as a contagious exanthem may be said to be unknown here, and isolated instances are puzzling as to etiology. The subject is still open for discussion."

In the *Indian Medical Gazette* for 1st May 1872, Dr. Garden of Saharanpur related how during August and September 1871, he attended four cases which were closely allied in their characters to scarlatina, in that sore throat, rash and desquamation were all present. In no case, however, was there albuminuria, but in one there was purulent otitis.

In the *Indian Medical Gazette* for 1st May 1876, p. 119, Dr. R. D. Murray described three cases of scarlatina, one of them fatal, treated in the Calcutta European General Hospital during December 1875 and January 1876. The patients, two boys and one girl, were members of a family living in Kidderpore.

CASE I.—A boy aged 9. The rash appeared on the second day with severe tonsillitis. No albumen was found in the urine at any time. Desquamation occurred on the 10th day, and recovery ensued.

CASE II.—A boy aged 13. Had sore throat and an eruption on the 4th day. No albumen was found in the urine, and death took place in five days. *Post-mortem*, all organs including the kidneys were found congested.

CASE III.—A girl aged 5. She had sore throat and the rash appeared in 48 hours. The urine was albuminous. Desquamation began on the 6th day and was followed by recovery.

In the *Indian Medical Gazette*, in a letter dated 15th February 1879, it is reported that Drs. Cayley and Partridge saw a case of scarla-

tina in Calcutta in a Eurasian boy, aged 12. The rash appeared on the second day. There were high fever and sore throat. The tongue had the typical strawberry appearance. There was general desquamation which came off the palms and soles in large flakes.

Dr. F. N. Macnamara, writing in 1880 in his "Climate and Diseases of Himalayan India," did not speak of scarlatina. But the same authority when he was in practice in Calcutta met with five cases in the children of an Armenian family living in the China Bazar.

In 1881, Professor Hirsch, of Berlin, published his *Handbook of Geographical and Historical Pathology* wherein he stated that with regard to British India, some observers, such as Chevers for Bengal, Rhude for Tranquebar, Huillet for Pondicherry, the authors of reports from Madras, Collins for the plateau of the Deccan, Morehead for Bombay, and Evans for Mirzapur, declared that neither has any case of scarlatina come under their notice, nor has any such case been proved to have occurred in India at all. While others, particularly Hogg and a few practitioners in Lower Bengal, remark that the disease has often been imported into India, but has never become epidemic there, having been always limited to a few mild cases among European or Eurasian children. Professor Hirsch went on to say there are unquestionably mistakes in diagnosis underlying the statements as to the isolated occurrence of scarlatina in India, especially the mistaking of dengue for it, and considering this, Milroy comes to the conclusion that the disease is proved to have existed at one point only, *viz.*, Colombo, in Ceylon, and there merely to a slight extent and in a mild form.

In February and March, 1881, five cases, one of them being fatal, occurred at Rawal Pindi among the children belonging to the 8th Hussars then quartered there. Here the infection was traced to a child who arrived in the Cantonment on the 25th January, 1881, and shortly afterwards was sent into hospital with suppurating ears followed by suppuration of the cervical glands which ended fatally in fourteen days.

In the *Indian Medical Gazette* for 1st March, 1883, Surgeon Hoey related the case of a European girl, aged 5, daughter of an officer living at Bangalore. The child was taken ill on the 3rd December, 1882, with fever and sore throat. A rash was seen on the 4th December. No albumen was found in the urine. The child had the typical strawberry tongue. Desquamation began on the 8th December, and the temperature reached normal on the 11th December. The disease could be traced to no cause, the parents having received no parcels from Europe for many months.

In the *Indian Medical Gazette* for 1st August, 1884, scarlatina was reported as being rather prevalent in Simla.

In 1886 Dr. Norman Chevers published his work on the Diseases of India. In this book he says he never saw any form of scarlatina in Lower Bengal, or any disease which could be fairly mistaken for it, nor had any medical man with whom he had discussed the subject met with a genuine and unmistakeable case in that great province.

Maclean, in his "Diseases of Tropical Climates," published in the same year, said he never saw a genuine case of scarlatina in India. He had heard that cases of it had been seen at some of the Hill Stations of Upper India; if so, they were probably imported from England. Certainly no epidemic of scarlet fever had ever been seen in India.

In the transactions of the Calcutta Medical Society for 1889 will be found a paper read by Dr. Kailas Chandra Basu, L.M.S., now Rai Bahadur, at the meeting held on the 10th April, 1899, entitled "Scarlet Fever in Calcutta." In 1886 there was an outbreak at 6, David Joseph's Lane, in which five children were attacked with fever, sore throat and a rash followed by desquamation. The youngest member of the family, a child aged 12 months, was removed to a neighbouring house, but did not escape suffering slightly from the disease. A Parsi gentleman, who lived next door and was a constant visitor to the infected house, carried the infection to his own family numbering nine souls, and all suffered from the same disease. The infection then spread northward among houses in Amratolla Lane, where at No. 18 a child aged 3 died in three days, and a young man living in the same house who watched the case contracted the disease and died in three weeks. In his case the fever did not abate, and the urine was albuminous and contained casts. In 1887 Dr. Basu saw an isolated case at 57, Cotton Street, in a boy aged 14. In 1888 Dr. Basu observed nine cases, one of them being a woman, aged 12, who showed signs of the disease six days after her confinement, and died in three days. Her infant child lived a month and then contracted the disease, and three days later succumbed. This woman was seen in consultation with Dr. K. McLeod who agreed with the diagnosis. Dr. Basu summarised the symptoms in all these cases thus: (1) In each case there were sore throat, stiff neck and fever, followed by a rash on the second day. (2) There was no regularity in the rise and fall of temperature. The temperature in the majority of cases came to normal on the 5th day, and in a few cases lasted some weeks. (3) There was a desquamative stage in every case, so complete in some cases that the skin peeled off in sheets. In more than two-thirds of the cases desquamation was seen on the 5th day. (4) The eruption was always red, distinctly visible at the flexures of the joints and neck, but appeared lost in the

face. Dr. Basu's patients were natives of India. The cases that occurred in Amratolla Lane were attributed to foul smelling, defective drains.

We believe that it was at the same meeting, Dr. Crombie mentioned having met with a case in a European family living in Garden Reach. Here the infection was distinctly traced to a letter received from a household in England in which scarlatina had been treated.

In August 1890 scarlatina broke out in Murree, and two mild cases occurred there among the members of the club.

At a meeting of a society held in June 1893 at the Grant Medical College, Bombay, Lieutenant-Colonel W. K. Hatch related the history of a case occurring in a European, the disease having been contracted on board some troopship. At the same meeting, Dr. Khory said he had met with a case in a Parsi in 1878. Dr. Dadabhai Jamasji said he had seen two cases in European children in one house. The infection had come from Poonah where the disease was at that time prevalent.

Sir William Moore, in the last edition of his "Family Medicine and Hygiene for India," published in 1893, page 373, said: "Scarlet fever is not so common in India as in England, but is becoming more so, consequent on successive importation."

Dr. E. A. Birch, in the third edition of his "Management and Medical Treatment of Children in India," published in 1895, page 219, said: "Happily in India this disease is extremely rare; indeed, till late years, it was considered wholly unknown in the country, but this is not so. It is a disease requiring cold weather for its nurture; the hot season seems to stay its vitality. In the cold season it is sometimes imported with the children of European regiments, but it disappears with the increasing heat."

We have also carefully examined the reports published annually by the Sanitary Commissioner with the Government of India, with regard to the incidence of scarlatina among the European troops and followers and among the native troops and the jail population of India since the year 1882. No mention is made of scarlatina in these yearly reports until the year 1892, when a case occurred among the native troops stationed at Edwardesabad; its origin, however, does not appear to have been traced. In 1893 the European and native armies were free. In 1894 in the European army there were eight mild cases, three of which originated in England or on board-ship, and five cases were untraced. In the native army eleven cases occurred, six at Meerut, four at Tiddin and one at Fort William. In 1895 there was one untraced case among the troops at Bangalore, the native army being free. In 1896 the European army was alone affected, giving eight cases with one death. At Sitapur and Ranikhet the disease began in men fresh from

home, but at Hyderabad and Quetta they were untraced. In 1897 the European army alone shewed twenty-seven cases and no deaths. Fifteen cases, which were reported from Chakrata, received their infection from Meerut. The one case at Meerut was untraced. There were six untraced cases at Muttra, but the cases at Ambala and Rawal Pindi occurred in troops just arrived from England. In none of the reports was the jail population shewn to be affected.

Perusal of the various reports on the Civil Medical Institutions published by the local Governments of Bengal, Bombay, Madras, Burma, the Panjab and Hyderabad was unproductive, no case of scarlatina having apparently been noted. We have in addition asked several of our professional acquaintances in various parts of India if they would kindly relate to us their experience with regard to the occurrence of scarlatina in India.

Dr. C. A. Fuller, who has been practising in Cawnpore for the last six years, never saw a case.

Dr. F. Van Allen, who has been practising in Madura for the past ten years, had never seen a case, though he has been constantly watching for it.

Major H. W. Pilgrim, I.M.S., had seen one case that was clinically typical of scarlatina, but he hesitated to call it so because of its being an absolutely solitary case occurring in an institution.

Dr. Baldwin Seal, who is now practising in Darjeeling, saw a couple of cases the year before last which were very like scarlatina. He also saw fourteen cases in one school this year, with sore throat and enlarged glands in the neck and with a scarlatiniform rash not typical. Temperature 103° — 104° . Slight desquamation, not in the hands and feet. The whole thing was over in a fortnight, desquamation and all. None of the urine of these cases which he examined was albuminous. The glandular swelling was very marked in all cases, but no one suppurated. He added that the disease fitted in with nothing which he had seen exactly, but at the beginning the disease was more like scarlatina than anything else.

Major F. P. Maynard, I.M.S., now Civil Surgeon at Hazaribagh, formerly at Ranchi, said, that when taking over charge of a Panjab Regiment upcountry, a case of scarlatina in a sepoy was handed over to him. The man was isolated in a tent, and convalescent when he saw him. He did not desquamate, and Major Maynard's opinion was against its being really scarlatina. This is the only case he ever heard of in India.

Dr. J. D. B. Fairlie, who has been practising in Colombo for the last six years, said he had never seen a case in Ceylon, and the medical men whom he had asked answered likewise. However, when he was on board the P. & O. S. S.

Oriental, three days out of Bombay, he was called to see a European child aged 8, the son of an officer in the Army. He found the patient with a rash, rapid pulse, sore throat, coated tongue of most typical appearance and albuminuria. He asked two officers of the Indian Medical Service to see the boy, and they concurred with him, that the case was one of scarlatina. All three medical men signed a paper agreeing in the diagnosis, on the strength of which the patient was landed at Aden and taken to the bungalow of some friends, who remained practically quarantined for months from the rest of the community.

Lieutenant-Colonel G. F. A. Harris, I.M.S., had seen cases clinically indistinguishable from scarlatina in the children of a European official at Simla.

Dr. C. A. L. Faulkner, now practising at Narainganj, formerly for many years in Darjeeling, had seen but one case in Darjeeling and that was among the soldiers of the Jalapahar Dépôt. The infection in this case was traced to a letter from home.

Captain R. Bird, I.M.S., had seen one case in Assam with all the clinical characters of scarlatina.

Dr. A. Powell of Kalain, Cachar, once saw four native children in a *busti*, all of whom had fever, and tongues and throats most typical of scarlatina. The parents told him the skin had been red, but he saw no erythema himself. All the children had enlarged glands below the jaw and marked constipation. Urine was obtained from two of the children, and in one case the urine contained one-third albumen on settling after boiling; this albuminuric child had slight branny desquamation subsequently, the others had none. He diagnosed scarlatina (?). The patients lived in a *busti* some distance from his bungalow, and as the parents resented his visits, he had no control over the cases. Dr. Powell, on the whole, thinks the absence of desquamation proves they were not all scarlatina, though the throats and tongues of all were remarkably like that disease. In his letter he said that about this time he obtained plague bacilli from some cases of fever with glandular swellings in the neighbourhood.

Lieutenant-Colonel C. H. Joubert, I.M.S., said he had heard of cases occasionally in other men's practice, but had never seen one himself. An adult patient of his in the late hot weather had fever with a most marked scarlet rash from head to foot, typically like scarlatina, but without any of the confirmatory symptoms, but with subsequent desquamation, such as one gets after excessive sweating at times. Lieutenant-Colonel Joubert was sure, however, that this was not scarlatina, but heat fever in a gouty subject which almost ran to heat apoplexy. He added, that if an adult can get such an attack why not a child. He had always thought that if the disease existed

out here, one could not fail to come across it in its contagious form, which he had never seen in all the twenty odd years of work he had had out here.

Major D. G. Crawford, I.M.S., had never seen a case during nineteen years work in India in numerous Civil Stations.

Dr. H.H. Bathe, acting Senior Medical Officer to the East Indian Railway, said, that early in 1897 he was called to see a European child in Asansol, who had a rather high temperature, quick pulse, and a bright scarlet eruption all over him. His throat was sore and the papillæ of his tongue were markedly prominent. Scarlet fever was diagnosed at once, and the diagnosis was confirmed by the remarkably free desquamation which took place as the eruption faded. That the disease was infectious was shewn by two other children and the father and mother catching it, all shewing the same symptoms and all desquamating freely. The baby of the family aged six months escaped, and Dr. Bathe believes it is not uncommon for very young infants to escape the infection. None of these cases shewed any signs of kidney complication. There was nothing to shew where the disease originated; and owing to strict precautions, it did not spread beyond that one family.

Dr. Sidney Smith, who has been in practice in Bombay for the last thirty-eight years, never had a case of scarlatina in his own practice; but during the seventeen years that he held the post of Port Medical Officer in Bombay, he saw a few cases among the children of soldiers arriving from England in troopships; these were at once removed to the Colaba Military Hospital and he saw no more of them.

Neither Dr. T. F. Pedley nor Dr. N. N. Parakh, both of Rangoon, have seen or heard of cases that could with certainty be described as true scarlatina.

We think the evidence we have brought forward goes to prove that scarlatina has occurred in India, and that the disease as such has not been confined to the European and Eurasian communities. Owing to the want of details, it is impossible to deduce much information regarding the season of the year when scarlatina most prevails in India: our first case occurred in the cold weather and our second in the hottest of hot weather.

In the majority of instances the source of infection could be traced directly or indirectly to Europe, but there are many cases where such infection cannot be ascertained, our own cases being among that number.

It is striking how often albumen has not been found by observers. However, its presence in scarlatina is not absolutely essential.

We believe that in no instance before our second case has a systematic bacteriological investigation been carried out in India with

regard to this disease, and we hope others will employ this means of establishing the diagnosis of the cases they encounter from dengue, rubeola, etc.

If Calcutta possessed a vigorous Medical Society, a committee could be formed to report on this question, but as there is no such body to take it up, we hope that the Editors of the *Indian Medical Gazette* will come forward and place the question on a sound footing by again sending out circulars as in 1871, not to the medical practitioners in Calcutta only, but to all official and non-official medical men practising in India, Burma and Ceylon, calling for individual opinions and for particulars of cases that may have been met with during their practice in the East.

The number of our experiments has not been numerous, the reason being that we had only one case to work from; but these experiments will give an outline for the course to be pursued in verifying other cases of suspected scarlatina. Should any medical man meet with any case of suspected scarlatina, we shall be only too pleased to carry out for him the necessary bacteriological investigation should he not have the appliances at hand for the purpose.

KELOID NATURE OF THE "FIBROUS" TUMOURS OF THE AURICLE.

By A. POWELL, M.B.,

Kalain, Cachar.

I BELIEVE the vast majority, almost all of the so-called fibrous tumours of the external ear, should be correctly described as keloid, though our English text-books do not suggest such a pathology.

Yet many of their descriptions quite tally with that of keloid. Erichsen says they are caused by the irritation of piercing and "are semi-malignant like the warty growths of cicatrices; and after excision—the only treatment—are somewhat apt to recur."

Their keloid nature is I think proved by

- (1) Their histopathology.
- (2) Their origin in a scar.
- (3) Their recurrence after excision.
- (4) Their greater frequency in dark races.
- (5) Frequent co-existence of keloid on other scars in the same patient.

European text-books describe them as occurring on the lobule. In this country in castes who pierce the upper and middle parts of the helix, the tumour is equally frequent in these positions.

The smallness of the wound is, of course, no argument against a keloid nature, as I have seen keloid grow on the site of a hypodermic puncture, the points of suture, the scars of acne, small-pox and rupia.

Case 7.—M., aged 25, wore his earrings in the position now occupied by a keloid ball. These lumps are about the size of a twelve-bore bullet and symmetrical. They are situated on the helix above the level of the meatus.

Three vaccine marks on the left arm shew keloid growth.

Case 8.—F., aged 26, has her ears pierced at the top of the helix, in the position marked x on fig. 1. There is a keloid tumour, the size of a small marble, on the left ring-hole. On the right the tumour is nearly as large as a billiard ball, and by its weight has made the patient lop-eared.



She has a keloid scar below the right knee, $2 \times \frac{1}{2}$ inches, raised half inch above the surface.

Two months after removal of the tumour from the right auricle, the scar already shewed keloid thickening. She has numerous small-pox marks, but none shew keloid formation.

Case 9.—G. M., 50. I have three times, in eight years, removed a "fibrous" tumour, originating in the ring-hole of the left lobule. Once it reached the size of a golf ball; the third time it was as large as a tennis ball. On that occasion I removed a considerable portion of the ear. The site of the scar now forms a ridge crossed at right angles by three bars in the position of the sutures.

He has a vaccine keloid on the left arm, a keloid lump $1 \times 1\frac{1}{4}$ below left knee, and a ridge $1\frac{1}{2} \times \frac{1}{4}$ marks the site of a wound on the right instep.

Case 10.—Manipuri woman has a raised ridge to mark where I removed a fibrous tumour from the lobule a year ago. Four nodules, the size of snipe-shot, mark the punctures of the sutures. She since brought a friend to have a similar tumour removed (case 11). I could find neither scar nor keloid, but Case 10 volunteered the state-

ment that her friend had hard lumps on a "position of shame," which she declined to exhibit.

Case 12.—G. F., 30, has keloid vaccine marks and also a fibrous nodule, the size of a hazel-nut, on the left ala of the nose, where she formerly wore a ring. It seems precisely similar to those of the lobule in Europeans.

SPONTANEOUS DISAPPEARANCE OF KELOID.

I have never observed such a case, but most of my patients are not under prolonged observation.

Mr. Hutchinson believes it always resolves spontaneously if the patient lives long enough.

Living on the other hand, says some of Hebra's cases, "are almost the only instances in which the new growth has been known to disappear spontaneously."

This point should be easily cleared up in this country where keloid is so common.

CONNECTION OF KELOID WITH INHERITED TENDENCY TO CANCER.

Against this theory I would point out that while Keloid is much commoner in dark races, cancer, in this district at all events, is very much rarer than in England. In eighteen months, I have met 57 cases of keloid, and but seven of epithelioma.

M'Call Anderson in contrast met five cases of keloid, 47 of epithelioma in 11,000 consecutive cases of skin disease in Glasgow. The contrast is heightened when one notes that M'Call Anderson is a specialist in dermatology, and I, an operating surgeon.

DOES KELOID ATTACK THE MUCOUS MEMBRANES?

I can find no such record, but I have been struck by the fact that the worst two cases of urethral stricture I have met with, have been in subjects marked by keloid. The strictures were of gristly hardness, the catheter feeling as if it passed into a hard turnip. In both, Wheelhouse's operation was performed, and in both, cutting the urethra felt exactly like cutting keloid. In one, there was a fibrous tumour (keloid) the size of a walnut over the mouth of a perineal fistula.

I have seen the meatus reduced to a fine pin-hole by keloid on the skin of the glans penis, and have had to amputate part of the penis for this condition at the urgent importunity of the patient. I gave him a gloomy prognosis of early recurrence, but have never seen him since he left hospital.

In a case which I diagnosed as tertiary syphilis of the larynx, I performed tracheotomy for progressive stenosis.

A year later I found *post-mortem* the larynx in its whole length and circumference changed into a firm mass of fibrous tissue, the lumen not admitting the passage of a probe.

The microscope showed the growth to be entirely fibrous without a suggestion of scirrhus. Can it have been keloid on a syphilitic scar?

DERMATITIS EXFOLIATIVA NEONATORUM: RITTER'S DISEASE.

By KEDARNATH DAS, M.D.,

Registrar, Medical College Hospital, Calcutta.

THIS rare acute disease of the new-born characterized by hyperæmia and excessive epidermic exfoliation, and accompanied at times by the formation of vesicles or bullæ, has received scant recognition in text-books. The disease, as far as I know, has never been recognised in this country: at least no case has been recorded in the *Indian Medical Gazette*. I am sure that cases do occur here, but they are thought to be cases of pemphigus neonatorum. The following case, which came under my observation only a few days ago, supplies the text for this paper:—

A Hindu male infant, twelve days old, suddenly developed patches of diffuse redness over the face and neck. On the next day the trunk got affected, and there were large blebs here and there, the temperature rising above 103°F. The day after the extremities were red, but the temperature came down. I saw the case now, and the large blebs gave me the impression that the case was one of pemphigus neonatorum. When seen next, after two days, I found large flakes of epidermis peeling off. The eyes were red. This exfoliation led me to the recognition of the true condition. There was slight bronchial catarrh with irritation of bowels. Father and mother healthy; no history of syphilis. The infant recovered in a week's time. Treatment consisted of the application of Vinolia cream and putting the infant on a large pad of cotton wool. The child is now suffering from an attack of furunculosis.

The following description of the disease will, I hope, be useful to the profession in recognising it:—

Ritter first described it carefully, and to him belongs the credit of establishing the existence of the disease. It is claimed that Herieuz, Huetter, Bille and others have described it, but they had confounded it with pemphigus. Ritter observed 279 cases from 1868—1878. Since 1878 only a few more cases have been reported in Germany. In America only 6 cases have been reported by Dr. Elliot till 1892. Hallopeau presented an example of it before

the Dermatological Society of Paris in 1892. Little is known with regard to its etiology; the disease is probably parasitic.

Symptoms and clinical course.—The disease generally occurs between the second and fifth week of life, rarely before the end of the first week. The process develops suddenly under the form of a diffuse redness, usually located upon the lower half of the face about the mouth, but it may occur on some other portion of the body or even be universal. The hyperæmia generally spreads rapidly and continuously, but it may appear in patches, becoming ultimately universal in a short time. As a rule, the extremities are attacked the last of all. With the extension of the hyperæmia, exfoliation of the epidermis begins upon the surface first attacked. The exfoliation may occur without any exudation, the epidermis being slightly thickened, wrinkled, dry and fissured into pieces of all sizes, loosened at the edges and removable by any slight mechanical action, and underneath them a thin layer of new epidermis will be found. On the other hand, the exfoliation may be preceded by an outbreak of small vesicles or large irregularly shaped flaccid bullæ. These may burst or being rubbed off, leave a raw-looking surface. In such cases the baby, at the height of the disease, presents a most pitiable appearance, as though it had been scalded—the epidermis on some portions wrinkled and sodden-looking, on others peeling off in large ragged flakes, while large areas may be entirely denuded, the rete alone remaining. The buccal and nasal cavities are affected, and fissures are very apt to form at the corners of the mouth. The conjunctivæ are usually injected, and in a case there was deep ulceration of both cornea. The process of regeneration is very rapid. Usually the disease runs its course in from 7—10 days. Unless some internal complication exists, the process is unaccompanied by either fever or systemic disturbance. Relapses are occasionally observed but are usually mild. As sequelæ, furunculosis may be mentioned as the most common, but abscesses with consecutive sepsis and gangrene may occur.

Pathology and morbid anatomy.—Ritter held that it was a form of pyæmic infection, but his opinion is apparently untenable. Bohn held that it was a dermatitis. Caspary regards it as an epidermolysis of unknown nature with secondary hyperæmia of the cutis—possibly an acute disturbance of nutrition in those external layers of the skin which do not contain blood-vessels. Kaposi and Bohn think that it represents a great increase in the physiological desquamation; but while the latter regards it as a pemphigoid eruption, the former agrees with Ritter in separating it entirely from pemphigus. Brocq considers it to be a peculiar form of pemphigus; but more recently Riehl has discovered a fungus with long thin mycelium,

and concludes that it is its cause. This parasitic theory is the most satisfactory, but requires corroboration.

Diagnosis.—When once the disease is studied, the diagnosis offers no difficulty. The only disease with which it can be mistaken is *pemphigus simplex acutus neonatorum*. Though pemphigus appears during the first few weeks of life, it usually develops earlier, commonly between 4th and 8th day, rarely after the 14th. It does not begin with diffuse redness but with an eruption of discrete bullae upon an uninfiltated erythematous base. These appear in successive crops for a week or more, but rarely after the first month of life.

Prognosis.—Is unfavourable. The mortality of Ritter's cases was 48.82%. The cause of death in some cases is the intensity of the attack; in others exhaustion, secondary septicaemia, marasmus or loss of animal heat. Inanition is a frequent cause, as also the development of some secondary or complicating disease.

Treatment.—Sustain the vital powers of the infant by proper nourishment and tonics. Externally fats and oils with some antiseptic, as boric acid, resorcin or ichthyol are recommended as well as enveloping the patient in wadding or in absorbent cotton. Ichthyol being a parasiticide and also a keratoplastic agent would be peculiarly indicated.

CEREBELLAR ABSCESS—TREPHEINING—DEATH.

By

F. P. MAYNARD, M.B., D.P.H.,

CAPTAIN, I.M.S.,

Hazaribagh.

A EUROPEAN sailor, aged eighteen years, was admitted to the Presidency General Hospital, Calcutta, under my care on April 1st, 1898, with a history of three days' fever. His temperature was 105°, he had severe general headache, much lassitude, no rigors, constipation of two days' standing, had vomited once on each of the previous days, had a moist thickly coated tongue, and said he had a good appetite. No pain or tenderness in the abdomen, a little gurgling in the right iliac fossa, skin hot and dry, pulse full and frequent; he had slight cough with scanty white mucous expectoration. He had had a discharge from his left ear for a long time, how long he could not say; no change in it lately. The ear was deaf; there was no swelling or tenderness over the mastoid. Pupils natural when exposed to light, when shaded the left was a little smaller. The case was at first regarded as one of thermal fever, and the ear was absolved from being the cause. It was syringed and an

iodoform dressing applied. Diaphoretic mixture and phenacetin were given, also castor oil. After the bowels were moved the headache became less, but he slept a little. Quinine was then given gr. x every four hours. On the 3rd he had some shivering and his temperature rose to 105°. The headache was less, pulse regular. On the 4th the headache was gone, and his temperature fell from 106.6° to 99.4°. He coughed now and again, and had some noises in his ear. On the 5th he had slept better, and had no headache. Appetite good, cough frequent, pulse regular, discharge from ear less, temperature still down. On the 6th and 7th there was no change except that his temperature fell to normal, and that he took his nourishment and slept well. Towards the evening of the 7th he complained of slight giddiness and some headache. Next day, 9th, he sweated much and seemed weak. His pulse fell to 60, but was regular and of good strength. About 5 P.M. his temperature rose to 101.6° and he became unconscious; his pupils were found to be unequal, the right more dilated, neither responding to light. The corneal reflex was good. Respiration rather slowed. The ear discharge increased, and he had no rigor or twitching. He passed urine in bed. Early next morning, 10th, he was insensible, pupils the same, difficulty in swallowing. The muscles of the back of the neck were rigid, those of the right arm slightly so. The breathing, which had been stertorous during the night, was Cheyne-Stokes in the morning. Pulse 70; temperature 102°. At 8.30 A.M., after the head had been prepared by shaving, and scrubbing successively with soap and water, turpentine, rectified spirit and then perchloride lotion, a curved incision was made behind the left ear, and the mastoid trephined. The bone was eburnated, and on reaching the mastoid antrum only a drop of pus was found and no necrosed bone.

The incision was extended backwards in a circular direction from its upper end, and the skull was next trephined over the tip of the temporo-sphenoidal lobe. There was no pulsation, and the dura mater was opened and reflected as a flap. The brain bulged into the wound and was punctured in different directions by a hypodermic needle and by a director, but without result. Being confident that there must be localised pus in the brain, the skull was next trephined over the lateral sinus in Dean's position. A hypodermic needle was pushed into the brain, once above and twice below the sinus, each time giving the sensation that it was passing into a cavity or less resistant substance, but drawing off nothing. The sinus was not opened. Symptoms were not relieved, and the patient died shortly afterwards. Scarcely any chloroform was used at the operation as the patient was deeply insensible. Dr. Raunking kindly assisted me at it.

At the *post-mortem* (limited to the head only) held the same day, the lateral sinus was found crossing the centre of the last made trephine opening. On removing the calvarium the cerebellum tore, and stinking pus escaped from its torn surface. An abscess, the size of a small tangerine orange, was found in the front of the left hemisphere of the cerebellum which was ruptured in removing the brain. It approached within a quarter of an inch of the surface, and must have been entered each time by the hypodermic needle, twice introduced in its direction during the operation with no result. The whole lateral sinus contained fibrinous clot. The lateral ventricles of the brain contained an excess of clear fluid. No meningitis. On examining the mastoid it was found sclerosed, and to have one cavity containing pus which had been opened at the operation, otherwise there were no mastoid cells. The jugular vein was not examined. *Cause of death*—Cerebellar abscess following suppurative otitis media—thrombosis of lateral sinus.

Remarks.—Cases of cerebellar abscess consecutive to ear-disease are at all times difficult to diagnose, but in India where rigors and intense

respiration, insensibility and rigidity of the neck muscles were suggestive of cerebellar abscess. The rigidity of the right arm pointed, however, to a cerebral localisation. After first exploring the mastoid the skull was therefore trephined first over the temporo-sphenoidal lobe. On finding no abscess there, it was again trephined over the cerebellum. The *post-mortem* showed that the last trephine opening was over the abscess, and the needle must have passed directly into it: the pity was no pus was withdrawn. The absence of bulging in the trephine opening made me wrongly hesitate to explore further. It would have been better surgery to have explored the lateral sinus, and on finding it thrombosed, and so not requiring ligature of the internal jugular vein in the neck, to have cut through it and explored the cerebellum further, passing a director or even a pair of dressing forceps into it before giving up the search for pus.

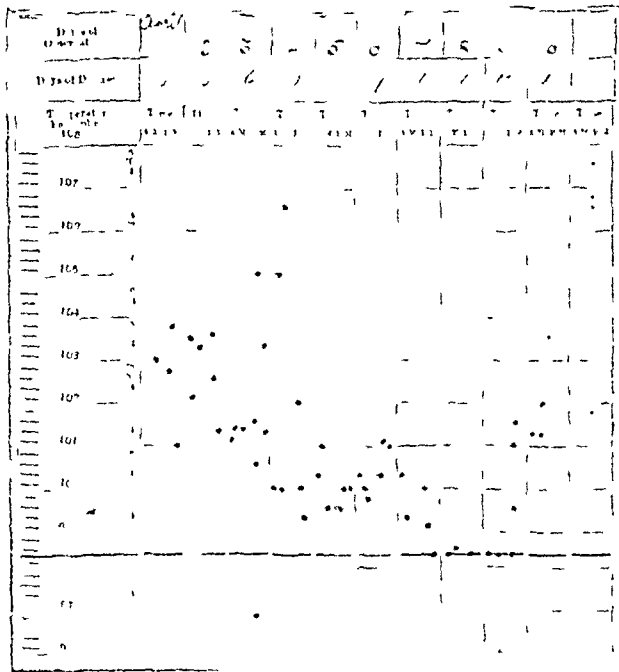
The literature of mastoid abscess and its complications has grown very much the last few years: two of the most recent and best contributions to it, bearing especially upon the case under discussion, may be referred to here. The

memoir on "Mastoid Abscesses and Their Treatment" by MM. Broca and Lubet-Barbon of Paris (translated by Mr. H. J. Curtis of University College, London, and reviewed in the *Indian Medical Gazette* in February 1898) deals primarily and comprehensively with the symptoms and treatment of mastoid abscesses, but also summarises the authors' recommendations with regard to intracranial complications. They say "these abscesses (cerebral), the diagnosis of which is often obscure so that one easily lets the opportunity for operation slip by, occupy almost always the temporal lobe in children; in adults it is the same in the majority of cases, but often enough the cerebellum is affected." They affirm that except for special indications afforded by unusual signs of localisation, the mastoid and tympanum ought always to be first opened, the aditus removed and through it the inferior surface of the sphenoidal lobe explored. The reasons they give for urging this are that the diagnosis is always doubtful and the operation of necessity therefore exploratory, that the abscess is frequently in

direct contact or fistulous communication with the diseased bone, that there may be a subdural abscess which can only be opened through the passage in the mastoid, and which may cause symptoms indistinguishable from cerebral or cerebellar abscess, and finally that in all such cases it is incumbent on the surgeon to commence by insuring perfect disinfection of the mastoid and tympanum.

In *The American Journal of the Medical Sciences* for April 1899, is an exhaustive paper

headaches from malarial fever and heatstroke are comparatively common, they are particularly so. In this case the shiverings on the 3rd instant aroused suspicion, but the rapid subsidence of symptoms and fever on the 4th was very misleading. With the exception of the slight giddiness on the afternoon of the 8th nothing occurred until the evening of the 9th—when cerebral symptoms set in quitesuddenly—to indicate that the patient was in such a dangerous state. The slight giddiness, slowness of pulse and



on "Abscesses of the Cerebellum from Infection through the Labyrinth: their Diagnosis and Treatment, including a Study of Four Cases" by Dr. J. Orne Green, Clinical Professor of Otology in Harvard University. The authors' analysis only can be referred to here. In all of the cases a chronic tympanic suppuration was running its course, without other symptoms than otorrhoea, when there was a sudden attack of vertigo, followed soon by dull pain in the depth of the ear. In one this was noticed to be accompanied by a marked increase of the deafness. Dr. Green thinks that this was the time of penetration and infection of the labyrinth, the vertigo being due to irritation of the cristæ acusticæ of the ampullæ of the semi-circular canals. In all four headache was a prominent symptom and bilateral: in two frontal, in one vertical, in none was it occipital. Optic neuritis was present in only one case, accompanied by extensive encephalitis. Its presence with other symptoms is confirmatory of brain disease, but is of little value in defining or localising the lesion: its absence has no meaning whatever. In only one case were there general septicæmic symptoms; in the others fever was absent till nearly the end. Sclerosis of the bone existed in all the cases. In all of them an accurate diagnosis before operation was impossible. They all showed the value of the tympano-mastoid exenteration in exposing the whole interior of the bone, and thus showing the course which the inflammation had taken in reaching the brain, and thus determining at least the situation of the brain disease—if not its character. The finding of the caries into the labyrinth, the absence of caries in all other parts (the roof or internal mastoid wall), the exposure and exclusion of disease of the sinus by aspiration pointed to the labyrinth as the direct route of infection. In every case this proved to be correct. Dr. Green's paper is illustrated by four photographs of the temporal bones removed and well repays study.

The case now recorded emphasises once more the absolute necessity of early and bold exploration of the brain when symptoms of cerebral mischief set in during the course of a suppurative otitis. It would be well in dealing with such cases to always bear in mind the remarks of Dr. J. Collins of New York quoted in the Current Literature columns of this issue, p. 305.

MEDICAL SCIENCE AND THE STUDY OF NATURE.

Lectures introductory to the course on Chemistry at the Medical College, Calcutta, Session 1899,

By

L. A. WADDELL, M.B., F.I.S., LL.D.,
MAJOR, I.M.S.

(Continued from page 253.)

THIS great discovery of the true explanation of combustion, which formed the starting

point of modern chemistry, was made by LAVOISIER in 1777. It was directly founded on the discovery of another new gas, *Oxygen* by Priestley a little earlier. Priestley made his discovery on August 1st, 1774, whilst heating "red precipitate" or red oxide of mercury, which is the 'rust or calx' of mercury. When this red powder is heated, as we do in this test-tube, another 'air' or invisible gas is given off and metallic mercury is left behind. This new 'air' which Priestley named 'De-phlogisticated Air' instead of putting out a light like 'Fixed air' was found to support combustion, so that bodies which burn in the ordinary air burned more brilliantly in this gas. Thus you see this piece of smouldering wood burns with greater intensity when I introduce it into this jar of this new gas. Again, this piece of iron-wire which only faintly glows in the air, bursts into active sparkling flame when I plunge it into this gas and becomes converted into a 'rust' of iron. And this piece of phosphorus burns brightly in this gas giving off white fumes of what may be called the 'rust' of phosphorus.

Priestley, however, fell short of black in that he failed to discern the bearing of his discovery upon the great question of combustion. It was left to Lavoisier to do this, in 1778 and his true explanation of combustion which at once reformed and remodelled chemistry, was this;—*that when a body is burned in the air it loses nothing but on the contrary increases in weight owing to its taking up a something from the air*—and this constituent of the air was the same gas which Priestley had discovered and to which Lavoisier gave the name of '*Oxygen*' or the 'acid generator' (from the Greek *oxus*, acid, and *gennao*, to generate) from one of its chief properties as then known. Thus Lavoisier showed that iron-rust was a compound of iron and oxygen, lead-dross a compound of lead and oxygen, just as red-precipitate or mercury-rust was a compound of mercury and oxygen.

Then when CAVENDISH (1731--1810) showed that water was not an element as supposed, but a compound consisting of Priestley's new 'air' and another new 'air,' which was called hydrogen or the 'water-generator,'—the true composition of air and water and combustion being thus understood, experiment, reason and analogy have done the rest, and in about one hundred years have brought the science of chemistry to its present marvellous development. The workers, more especially associated with this advance, have been JOHN DALTON, who in 1808 published his atomic theory*; SCHEELE, the Swedish chemist (1742-1786), who discovered chlorine and many important compounds including glycerine, oxalic and many organic acids and hydrocyanic or

* John Dalton and the Rise of Modern Chemistry. By Sir H. E. Roscoe.

prussic acid, which last-named tragically took its discoverer's life, GUY-LUSSAC (1808) and AVOGADRO (1811), who investigated the laws of gaseous volumes; BERZELIUS (1779-1848), who first estimated precisely the atomic weights of the elements; Sir HUMPHREY DAVY, BUNSEN, FARADAY and other physicists, and LIEBIG, who especially developed organic chemistry—the chemistry of animal and vegetable substances, a department which now far exceeds in variety and importance that of the inorganic. And ardent workers are day by day adding to the grand mass of facts which builds up the fabric of modern chemistry.

At the present day, the vast dimensions and utility of the science may be illustrated by a reference to a few of the ordinary applications of chemistry. No science, perhaps, has contributed more to the necessities and comforts of civilized life. On all sides we are surrounded by objects which have been conjured up by this art. The textile fabrics of which our clothes are made have been refined, bleached, or dyed by chemical means. The most brilliant of our dyes, the aniline colours of every hue, are obtained from grimy coal tar. We owe soap, glass and lucifer matches to chemistry; also the printing press type, ink and paper; gunpowder, dynamite and poisons of deadly power. Artificial ice, which contributes so much towards mitigating the effects of the fierce heat of the tropics, is furnished by a physico-chemical process. Electricity is largely dependent on chemistry for its generation; hitherto the most useful application of this many-sided force has perhaps been as a swift-winged messenger, but its possibilities as a motive agent and lighting power have now become more than an idle dream of the enthusiast. In photography the mysterious changes impressed by light upon lunar caustic are now developed into pictures of surpassing beauty and unswerving faithfulness. And by the spectroscope the sun himself, though millions of miles away, has been forced to tell the story of his composition and to print the lines that record with mathematical precision the presence or absence of every element in its atmosphere. Within the past few years such great progress has been made in constructive chemistry that many of the most complex products of vegetable and animal life have been formed artificially by building them up synthetically from their elements; and these artificial products produced by chemical means are now usurping the place of the natural.

Its medical bearings, however, are those which especially concern you here; and as to the inestimable value of these for you, it is, I think, not too much to say that the most important advances which have been made in scientific medicine of late years have been chiefly owing to the employment of chemical methods of research to disease. Biology and the microscope, and

other instruments of precision for diagnosis have all contributed to this progress, but the chief share seems due to physiological and bacteriological chemistry, which, by revealing to us the chemical processes of nutrition and malnutrition, the formation of toxins and their antidotes the antitoxins, have placed the treatment of sickness upon a much more scientific basis, and also provided us with more satisfactory weapons to combat or prevent the onslaughts of disease.

This intimate and important relation of chemistry to practical medicine, I shall here illustrate in a little detail in the hope that it may stimulate you to take a deeper interest in chemistry itself.

Before the physician can ascertain the nature and extent of disease with a view to its cure or prevention, he must first of all familiarize himself with the state of health, and know how this healthy standard is sustained. This is the province of physiological chemistry; and pathology is merely the physiology of disease. The characteristic property of a healthy living organism consists in its assimilating for its nourishment from the outer world, materials which become broken up in the laboratory of the body and by the chemical energy thus set free the healthy actions of the body are maintained.

The living body is a machine, not like a watch or pump, but of the nature of an army—an army of cells. "Of this army each cell is a soldier, an organ a brigade, the central nervous system headquarters and field telegraph, the alimentary and circulatory system, the commissariat. Losses are made good by recruits born in camp and the life of the individual is a campaign, conducted successfully for a number of years but with certain defeat in the long run. . . . Therefore there can be but two kinds of diseases, the one dependent on abnormal states of the physiological units and the other on perturbations of their coordinating and alimentative machinery."

How chemistry explains much of the healthy action of the organism and indicates the way in which to remove disease, may be illustrated by a reference to digestion.

About the middle of last century, Réaumur discovered that the stomach secreted a juice that dissolved food by chemical action. The acidity of this juice was later ascribed by Prout to hydrochloric acid, and still later Schwann discovered the pepsin, and assigned to it its ferment action. Next came the investigation of the peculiar soluble bodies resulting from the gastric digestion of albuminous bodies. This digestive process, it was found, was interfered with or arrested when the proportion of acid was reduced or when an alkaline reaction appeared; and the same occurred when the pepsin or its peptones

were precipitated by the entrance into the stomach of strong alcohol, or of the salts of the heavy metals, or of concentrated solutions of the salts of the alkalies. Whilst the presence of such bodies as dilute solutions of soda, alkaline mineral waters, and saliva rather assisted the secretion of the gastric juice. Decomposition and fermentation were also found to be arrested in the normal stomach. Now in the treatment of gastric disease it is necessary to know whether the secretion of the hydrochloric acid or of the pepsin is absent, or imperfect or hindered in any way. This last is the common condition in all severe forms of dyspepsia, and generally leads to abnormal fermentations with the production of toxins. Condiments, it is found, and carminatives promote digestion largely through their antiseptic properties in stopping fermentation. To ascertain which of these morbid conditions exist, it is now becoming common to estimate by chemical tests the total acidity of the contents of the stomach, the free and combined hydrochloric acid present, lactic or other acid, the pepsin and rennin as practised by Ewald's method.

In the process of digestion, the pancreas or 'sweetbread' gland also is important. Three ferments are secreted by it for the digestion of the three great types of food, namely, the albumins, the fats and the carbo-hydrates. But the pepsin of the gastric juice, and the trypsin of the pancreatic juice, although both peptonising albumin, destroy each other if brought into contact, so that, if one wish to assist a weakened digestion with pepsin (including the so-called vegetable pepsin, papayin and the diastase and maltose from malt) this must be introduced into the stomach. Whilst the pancreatic ferments and their vegetable analogues must be enveloped in some medium which will carry them beyond the stomach, protected against the gastric juice, or be introduced rectally. In this latter way, it is possible to sustain life when no food enters by the ordinary portal.

Diabetes too, that disease which almost decimates the adult educated population of Bengal, is a chemical disorder of digestion, whereby the normal process of digestion of the carbo-hydrates stops short at the formation of sugar, and to be successfully combated it must be dealt with from a chemical point of view. So, too, albuminuria seems related to a fault of nutrition and occasionally to the action of toxins, whereby albuminous material accumulates in the blood.

Even in normal digestion poisonous products are formed. Before the albuminous constituents of our food can be absorbed they must be split up during digestion into albumoses and peptons, which are poisonous in themselves. These therefore before entering the blood undergo further chemical change, during their absorption through the walls of the stomach and intestines and probably also in the liver, by which they lose

their poisonous qualities. It is thus evident how readily a fault of digestion by allowing some of this poisonous material to enter the blood may cause the general disturbance of the system which form the familiar phenomena of fever, headache, neuralgia, &c.

These poisons resulting from the chemical processes of digestion, as found in the intestinal canal during digestion, are produced by the ferments or enzymes of cells within the tissues of the animal. But much more actively poisonous than these are the chemical products excreted by many of the parasitic microbes which infest the digestive or respiratory tracts or the blood and cause the deadly infective diseases.

The smallest and most lowly of all vegetables, the 'bacteria' form ferments and poisons, which latter are like the alkaloidal poisons formed by some of the higher plants, such as the morphine and strychnine of the poppy and vomit-nut. These poisons are called *toxins* from the Greek word for 'arrow' or more properly a *poisoned* arrow, as the savage tribes generally poisoned their arrows, and this was the most evident way of introducing poison into the blood.

Now, one of the beautiful provisions in the balance of Nature's forces is that Nature sometimes supplies an antidote along with the poison, if we know where to look for it. Thus in the Calabar Bean, as Dr. Lauder Brunton and others have pointed out, there are two poisons, physostigmine and calabarine, the former tending to paralyse the spinal cord and the latter to stimulate it, so that each poison to a certain extent antagonised the other. The same condition is even more marked in Jaborandi, of which the two alkaloids pilocarpine and jaborine antagonize one another's action, so that although pilocarpine generally greatly predominates, it might be possible to get a specimen of the leaf having no poisonous action at all, although it contained a quantity of both of these poisonous alkaloids.

So too, in a somewhat analogous way, the toxins, formed by the bacteria, when injected into susceptible animals, cause the production of antitoxins which neutralize the toxins, and so secure to the animal an immunity against their harmful action. This condition, which we call immunity, appears to be probably the result of a direct chemical union between the poison and its antidote, in somewhat the same way as the combination of an acid with an alkali, each poisonous by itself, yet combining to form a relatively inert salt.

These antitoxins are now prepared in large quantities in laboratories, and are used with considerable success in the treatment of diphtheria and some other infective diseases, which now are freed to such an extent from their terrors, that the modern physician may almost

say in regard to them as Shakespeare with his customary prescience makes one of his characters exclaim :—

“Tut man ! one fire burns out another burning.
Put thou some new infection in thine eye,
And the rank poison of the old will die.”

TROILUS AND CRESSIDA.

Immunity also may be acquired against the venoms of snakes in an analogous way, as was indicated by me in experiments made several years before Calmette and Fraser began their observations on this subject.*

Drugs, also, are obtained mostly by chemical processes ; so much so that the mere vendor of drugs is popularly called a ‘chemist.’ By chemical methods the active principles of vegetable drugs are extracted in laboratories thereby enabling us to get rid of a great mass of inert and otherwise objectionable matter ; and chemistry also affords valuable indications for the effective administration of the drug thus provided. The high degree of science to which this pharmacological branch of chemistry has reached is evidenced by the fact that several valuable new drugs which had not previously existed have been created by synthesis from theoretical reasons. It was found that certain drugs in an organic series though possessing valuable curative properties had certain objectionable qualities in opposite extremes which might possibly be avoided were an intermediate member of the series to be found, and on creating artificially this body it has often justified its theoretical expectations.

In the future of practical medicine it is becoming probable that chemistry will soon supply the physician with the means of affecting in any desired way the functions of any particular physiological unit of the body, so that it will become possible “to introduce into the economy a molecular mechanism, which, like a cunningly contrived torpedo, shall find its way to some particular group of living elements and cause an explosion among them, leaving the rest untouched.”†

Surgery also is deeply indebted to Chemistry. The antiseptic system which has revolutionised modern surgery was the outcome of the discoveries of the great French chemist Pasteur in respect to putrefactive fermentations. These discoveries led Lister to combat the putrefactive action by chemical means. The results have not only enormously reduced the mortality but altogether altered the character of surgery, so that the keynote is now conservation ; and operations on internal cavities and organs are now freely undertaken, such as were undreamt of as possible

only about a generation ago. In surgical pathology too it is coming to be suspected that some tumours are due to the irritation of morbid chemical products. It was chemistry which produced chloroform, and other general and local anæsthetics which have robbed pain of its terrors and freed suffering humanity from the agony of the surgeon’s knife.

Sanitation, which deals with the preservation of health and the prevention and stamping-out of disease, is especially dependent on chemistry for its greatest triumphs. Its hygienic measures are largely controlled by the experimental work done in the chemical laboratory or in its offshoot the bacteriological, where the apparatus and lines of work are chiefly those of chemistry. In its endeavours to secure purity of water and air, and the healthy feeding and housing of the people, and in its investigations into specific areas of unhealthiness and the difficult problems as to the nature of predisposition and immunity to disease, sanitation indents largely on chemistry at every turn to estimate the quality of the water, the food, soil and effective disposal of refuse, the relative efficacy of disinfectants, &c. So also the practical measures for the prevention of infective disease are becoming largely a matter of preparing vaccines, antitoxins and curative serums in laboratories, after the manner of Pasteur, who was a chemist, pure and simple.

It seems clear, then, that it is to physiological chemistry that we must look for the next great advances in knowledge of many of the unsolved mysteries of disease. Nevertheless, it seems equally clear that in order to reach the truth and make true progress much greater care must be taken than at present in accepting as facts the numerous statements purporting to be facts which are now being so freely put forward by quasi-scientific workers.

For the scientific method is tending to be sorely abused at present. Of the countless workers in these fields of enquiry, attracted by the fascination exerted over most minds by the new scientific theories of disease, the new methods of research, and doubtless also because this study is so fashionable at present—of these myriad workers it may safely be said that very few indeed, even amongst the professional specialists, possess the necessary qualifications for original research, the necessary inventive instinct controlled by critical faculty, and the power of interpreting truly the results of carefully planned experiments.

To this cause must be ascribed so many of the ‘false’ discoveries which are now daily being made, due to hasty generalization on insufficient data and the many facilities for immediate publication ; but, above all, to their enthusiastic authors themselves being devoid of the necessary instinct for original research,

* *Are Venomous Snakes Auto-toxic ?* in Scientific Memoirs of Medical Officers of the Army of India, Calcutta, 1888.

† Huxley’s *Science and Culture*, p. 348.

and carrying the fashionable craze of the moment to absurd lengths. The result is that sooner or later the authors are stultified, and the scientific method, which they partly used and misused, suffers undeserved discredit.

Of other fashionable crazes in medicine, one of the most persistent was blood-letting, and we nowadays are appalled at the atrocious barbarity of the thing, which nevertheless held men's minds captive for twenty to thirty centuries and has only been given up some two generations or so ago; although common sense frequently revolted against it. Achilles, we are told, when the oracle which he consulted about some minor illness declared that he must lose thirty pints of blood and then be plunged into the freezing waters of the river, thought for once that discretion was the better part of valour, and speedily put an immense distance between himself and the surgeons of that oracle. And so firmly was this gruesome and mischievous fashion established, that in England, even long after the beginning of the present century, physicians used to be fined and imprisoned because they allowed a sick man to die without bleeding him. Yet, nowadays, equally false and quite as absurd, if not quite as dangerous, views are put forward and may be accepted or tacitly excused if they happen to run on the quasi-scientific lines, which for the moment are deemed fashionable.

You must be careful, therefore, never to exalt theories over facts, fictions over truth, or to accept as the truth that which is not positively established by observation and experiment. For it is by the truth alone that we will be able to enrich our knowledge of disease and make any real progress in unravelling its tangled mysteries. Your course in chemistry offers you a valuable training in the inductive and experimental method of searching for the truth in Nature; and whether or not you take full advantage of it to acquire the scientific habit of mind now rests with yourselves.

Finally, I would have you remember that, if you do not acquire something of this scientific habit of mind and always try to use in a scientific manner the scientific knowledge you now accumulate, you shall still remain in practice empirics after all, and be unworthy of your greater opportunities and of the scientific spirit of the age.

A Mirror of Hospital Practice.

HERPES OF SECOND INTERCOSTAL AND INTERCOSTO-HUMERAL NERVE AREA.

By A. POWELL, M.B., M.Ch.,
Kalam, Cachar.

In this case, as shewn by the photographs, the Herpes extends to within an inch of the wrist.

In the dissecting room I have found this extensive distribution of the intercosto-humeral nerve the rule rather than the exception, contrary to the text-books of anatomy.



(a) Front View.



(b) Back View.

I also had a case of zoster of the 3rd intercostal in which patches of vesicles existed halfway to the elbow on the inner surface of the arm, indicating the existence of an accessory intercosto-humeral nerve.

Many years ago, in a case of gunshot wound of the axilla, some days later, herpes extended down the inner surface of the arm for some distance below the elbow. Probably the lesser internal cutaneous nerve was involved in the wound or the subsequent inflammation.

A CASE OF ULCERATION OF THE CÆCUM FOLLOWED BY MULTIPLE ABSCESES OF THE LIVER.

UNDER THE CARE OF

LT.-COL. J. MAITLAND, & CAPT. A. E. GRANT,

I.M.S.,

I.M.S.,

General Hospital, Madras.

(Continued from page 251.)

Remarks.—The most remarkable point in the case is the fact that in spite of the grave lesions existing in the cæcum and liver, the patient up to the 7th of March appeared to be in his ordinary state of health, and neither he himself nor his friends had reason to suppose that there was anything the matter with him. The *post-mortem* examination demonstrated that for a considerable time previous to his admission to the sick list there had been active disease of the cæcum. The comparative firmness of the adhesions surrounding the cæcum shows them to have been of such longer standing than the soft adhesions surrounding the extravasated pus in the upper part of the abdomen, and the appearance of the ulcers in that part of the bowel also indicated that they were of considerable standing.

There can be little doubt, but that the sudden attack of pain in the neighbourhood of the left hypochondrium which ushered in the final illness was due to the rupture of the abscess in the left lobe of the liver, and the escape of pus into the abdominal cavity, and that this abscess, as well as some of those in the right lobe, must have formed some time previous to this date. Had the patient been of the class of many hospital patients, his story would most probably have been received with suspicion, but in this case there could be no doubt about the correctness of the history which was moreover corroborated by numerous friends. Beyond a little looseness of the bowels six weeks previously, so slight that he thought nothing of it, the patient appeared to be in ordinary health.

When the patient was first admitted to the General Hospital it was noted as peculiar that the swelling below the ribs, if due to enlargement of the left lobe of the liver, extended much further to the left than is usual. It was also considered unusual that so great an enlargement should have arisen in so short a space of time. Taking all circumstances into consideration, however, it was supposed that there was an abscess of the left lobe, and it had been arranged that an exploratory operation should be performed. That the epigastric swelling was due to a ruptured abscess was not suspected.

The case presents several other points of interest bearing upon the diagnosis of multiple

abscess of the liver. It shows, in the first place very clearly, that grave intestinal disease may exist without producing any obvious symptoms, and that the absence of such symptoms does not necessarily negative a diagnosis of multiple abscess. The enlargement of the right lobe and the evidence of perihepatic inflammation led to the suspicion that there might be another abscess in that portion of the liver, but in the absence of any history of dysentery (the fact of the patient having had 'looseness' was not then known) the presence of multiple abscesses was not expected.

The existence of jaundice should be looked upon with suspicion, as such a symptom is hardly ever met with in cases of "tropical abscess." It must be observed that in this case the jaundice was not well marked, and the patient naturally of a sallow complexion. The peculiar odour emanating from the body was also not well marked.

Taking all the circumstances into consideration, it cannot be said that there was sufficient grounds to establish a diagnosis of multiple abscess or to contra-indicate operative treatment.

On the other hand, it is quite certain had the proposed operation been carried out, the only result would have been to precipitate the fatal issue.

Sickness in Assam.—The year 1897 was extraordinarily unhealthy in Assam, it is therefore satisfactory that in 1898 the health was better. The attendance at outpatients at the dispensaries shows a steady growth of confidence in the medical treatment and relief afforded by the dispensaries, the number of outpatients treated being 603,290, of whom 22.17 per cent. were women. The rate of mortality among in-patients, of whom there were 6,977, while much less than in the previous year, was very high as compared with other provinces, and a large proportion of the deaths is said to have occurred among destitute coolies who had deserted from tea gardens and railway works. Malarial fever was much less prevalent than in the previous year, and the number of cholera cases also fell slightly. The Principal Medical Officer takes a gloomy view of the progress of cholera in Assam, but the Chief Commissioner does not think it can be said that the cholera figures are steadily rising. The great epidemics of 1895-96 and 1896-97 were brought into the Province from Bengal by coolie emigrants, and there has been no recent recurrence of the terrible cholera mortality on the river steamers. On the other hand, there was a very severe epidemic at Manipur, which had no cases to record during the epidemic of the previous year. In 1898 the dispensary there treated 1,621 cases out of 2,972 for the whole province. Thus if the Manipur State figures are eliminated, the number of cholera cases treated was less than in any of the previous four years. A leper asylum was opened at Sylhet in October, 1898, and contains accommodation for 18 single lepers and 14 families. Only three cases were received during the year, all of which came from the Sylhet district. Some anxiety has been felt by the Government of Assam with regard to the possibility of the spread of the dreaded *kala-azar* in the Golaghat sub-division, and the last *Gazette* contains a resolution on a report presented by Assistant-Surgeon Atul Chandra Rai on the subject. The report is of a reassuring nature, as it appears that the only part of Golaghat where cases of *kala-azar* have undoubtedly occurred is the Namdyong mauza—a sparsely-populated tract bordering on Nowgong, and in great measure isolated from the rest of the sub-division. Owing to the difficulty in diagnosing the disease, it appears that there is a tendency, especially in Golaghat, where an epidemic spreading from Nowgong has long been anticipated, to return as cases of *kala-azar* cases of sickness and death really due to ordinary fever, and this no doubt accounts for some of the alarm which has been felt.

THE
Indian Medical Gazette.
AUGUST, 1899.

DISEASES DUE TO SELF-EMPOISONING
OR
AUTO-INTOXICATION.

THE leading trend of medical science of late years has been mainly in the direction of viewing disease—its causation, treatment and prevention—more and more from the chemical standpoint; of looking at most of the general diseases and functional nervous disorders as poisonings of the blood or toxæmias. This apparent swing of the pendulum of opinion back towards the old humoral doctrine that 'the Blood is the Life' is not in reality a retrograde movement, but an advance on a higher platform and represents the most modern development of medical progress. It has long been recognised that some alteration in the quality of the blood appears to precede in a causal relation any alteration of structure by disease, and that a poisoned blood-supply means diminished health and life, if not actual death. But it is only just coming to be recognised how extremely prevalent blood-poisoning is as a prolific source of a host of ordinary ailments and diseases not hitherto suspected of being associated with it.

Whilst so many workers at the fascinating parasitic theory of the infectious fevers have been proving that the symptoms of such diseases are due in great measure to the poisonous chemical products, the toxins, of the malignant microbes which have invaded the body and which have to be combated by antitoxins; other observers have been investigating the effects of those bacteria, which are normally present in the body, and of those products of digestion and tissue-change, which, when disturbed by overproduction or non-elimination, poison the blood and so produce multifarious disease. In this way it is being found, are produced not only the ordinary so-called 'blood-poisoning,' but innumerable diseases, such as apparently gout, rheumatism, neuralgia, headache, 'biliousness' and obscure feverish attacks including what is often termed 'a touch of malaria,' and even such unexpected conditions as general paralysis and certain kinds of insanity. So far-reaching and

widespread indeed are the effects of these auto-intoxications that the subject is well deserving of quite as much attention as is being paid to the infectious fevers, for it affects immediately the comfort and fate of a much greater number of human lives.

Strictly speaking, 'auto-intoxication' should be confined to that poisoning of the system by products elaborated by the individual's own living tissues, namely, by that class of chemical products which are called *leucomains*, such as produce gout, neuralgia, &c. It nevertheless is also usually held to include poisoning by absorption of the products of bacterial fermentation and putrefaction in dead matter, the so-called *ptomains*, which produce the familiar symptoms of septicæmia and infective and other fevers and irritant poisoning.

The former class, the *leucomains*, seem to produce poisoning through some alteration in the activity of the ductless glands which regulates tissue-change, whilst the *ptomains* resulting from the vital activity of bacteria, depend on excessive fermentation or putrefaction of the contents of the intestinal or other cavities or surfaces. Chemically, these *ptomains* are closely allied to the 'alkaloids,' which, like them, are also produced by living plants, and whose poisonous action (as of nicotine, morphine, strychnine, daturine, &c.) has long been recognized as producing severe affections of the nervous system, such as stupor, convulsion mania, insanity, &c.

As instances of poisonous *leucomains* are xanthocreatinin, which causes depression and vomiting, para-xanthin and hetero-xanthin, which causes rigor and convulsions, gerontin which paralyses the nerve-centres and ganglia of the heart, and from cholin it has been shown by Schmidt and Weiss that poisonous neurine may be formed by the action of bacteria—the action of neurine agreeing closely with muscarine in paralysing the heart and purging, and in being especially toxic to nerve trunks paralysing respiration like curare. The production of *ptomains* is chemically a process of oxidation with the formation of sulphuretted hydrogen, carbonic acid and water as bye products.

The range, therefore, of widely different processes covered by auto-intoxication is very great. Although as yet but imperfectly understood, it would seem to include the following:—

Firstly, the processes by which toxins, which are stored up in the body as the result of some interference with the ductless glands which produce substances indispensable to healthy life, such as when the thyroid gland is congenitally absent or its function extinguished by tumour or extirpation, there results cretinism or myxœdema evidently as an auto-intoxication, and feeding such patients with the thyroid glands of sheep removes the symptoms; and if the same kind seems to be the action of citric acid in scurvy and iron in anæmia, by supplying the blood with certain deficient substances.

Secondly, those in which chemical products of healthy cell life, normally present in the blood, which become so increased by abnormal chemical activity or defective excretion, as to act as toxins such as certain products of digestion, cholin, urea, causing uræmia, sugar in diabetes, acetonuria, sulphuretted hydrogen.

Thirdly, those in which abnormal products are the result of microbes, and especially of the putrefactive bacteria, which invade the gastrointestinal tract. Under this class comes septicæmia, and probably malaria, and also pathological products, which produce diabetic coma-albuminuria.

But it is through the intestines that auto-intoxication most frequently occurs by putrefactive changes in the food. Any undue delay there of the ingested food leads to absorption into the bloods of toxic ptomains, which poison the system and produce the train of symptoms, headache, feverishness, biliousness, &c. For this although constipation or coprastasis is the rule, it also occurs in the fermentation of diarrhoea, dysentery and cholera.

The exact manner in which this auto-intoxication occurs is beginning to be ascertained. When fermentation of carbo-hydrates occurs we have produced the various fatty acids, while with the decomposition of the albuminous substances, there result ammonia, sulphuretted hydrogen, indol and skatol, leucin and tyrosin, and some other products. "Aaron and others have shown that there is a constant formation of ptomains and toxins in the intestinal canal by bacterial action. The retention of all these injurious products would naturally, if absorbed—and experiment has proved that this absorption does take place—work harmful changes in all parts of the body. The nervous system being the most delicately organized is usually the first

to suffer. While we do not know positively that such is the case, yet reasoning from the fact that a cleaning out of these poisons, *i.e.*, of the intestinal tract, often causes a prompt disappearance of the symptoms, we have at least strong presumptive evidence. The kidneys if not acting properly are also a most important factor in the production of auto-intoxication. Bouchard states that in the normal urine of an adult man, there is present each day a sufficient quantity of several poisonous products to have caused the death of the individual if not excreted. We can readily see from this how small an amount of kidney disturbance may be required to produce symptoms of auto-intoxication. Among nervous symptoms probably the most common is headache. Almost all of us are acquainted with the relief that follows a thorough evacuation of the bowels. Vomiting of the so-called cerebral type occasionally occurs. Among psychic symptoms, disinclination to work, depression of spirits are all of the most frequent occurrence. Among circulatory disturbances, may be mentioned tachycardia, and other forms of vasomotor alteration. Skin affections are not uncommon as the result of auto-intoxication. The occurrence of urticaria as the result of the ingestion of certain foods, particularly lobsters, strawberries, and tomatoes, while at one time ascribed to idiosyncrasy, we now know to be due to auto-intoxication, for in so-called susceptible individuals, the urticaria has been prevented by keeping the intestinal canal free and active. Albuminuria may occur as a result of auto-intoxication: in the various forms of acute and chronic intestinal obstruction, the exit of toxins being prevented along the *prima via*, they are absorbed and finally excreted to a considerable extent by the kidneys, on which latter they exert their poisonous action. We can readily see that albuminuria might result, or even an acute nephritis. We must regard chlorosis as due to a large extent to auto-intoxication.*"

The symptoms of general paralysis appear to be due in great part to auto-intoxication. Drs. Mott and Halliburton, in a paper recently (April 20th) read before the Royal Society, show that choline (C_5, H_{15}, N_2) and nucleoproteid are produced by the acute disintegration of brain-tissue, and are absorbed into the blood. They found choline in the blood of general paralytic

* *Jour. American Med. Assn.*, Jan. 1899.

patients, and ascertained its characteristic action on the neuro-muscular mechanism of the blood-vessels.

The practical outcome of these investigations is already considerable. While broadly establishing on a scientific basis, Dr. Lauder Brunton's so-called 'internal sewage system' of treatment by internal disinfectants, such as salol, these observations indicate the lines of treatment in certain specific cases. Thus it would seem that in general paralysis and certain nervous states, where cholin and neurine are produced, the use of food containing much lecithin, such as eggs should be prohibited, as lecithin tends to split up into the two poisonous bases abovementioned. Even a thickly-coated tongue may load the blood with toxins. Diabetes, Dr. Lauder Brunton believes, may find its cure possibly in a glycolytic enzyme, although about a quarter of a century ago he failed to extract such a substance from muscle.

These attractive investigations are still in their infancy, and much care will be needed to avoid interpreting merely secondary results as causes. Altogether this field of research in chemical physiology is one of the most promising in practical medicine, and bids fair to yield results which will remove a large amount of discomforting ill-health and disease.

LONDON LETTER.

THE TUBERCULOSIS CONGRESS AT BERLIN.

As a function the International Tuberculosis Congress which recently assembled at Berlin was a brilliant success. The arrangements made for the reception and entertainment of the members and delegates were excellent. From the Empress of Germany downwards all vied to emphasise the importance of the occasion and contribute to the interest of the proceedings. The attendance of members numbered 2,000, of whom 112 were delegates from foreign countries. The business of the Congress was carefully arranged. Sections were devoted to various aspects of the question. The dissemination of tuberculosis was considered in one section, the etiology in a second, prophylaxis in a third, therapeutics in a fourth, and sanatoria in a fifth. Papers were read on subjects falling under these categories, and the reading of these was followed by a discussion. Thus the matter was systematically approached from a variety of standpoints, prevention

and treatment being the centre to which all the transactions tended. It is needless to say that the Congress was sterile in so far as the publication of any new discoveries or facts is concerned. In these days meetings of this sort are seldom the occasion of adding anything material to existing knowledge. The results of observation and research find publicity elsewhere and otherwise. But these gatherings give opportunity for taking stock of existing knowledge and discussing its truth and value. Perhaps the most important feature in the proceedings was the demonstration of the structural and administrative arrangements of the sanatoria which have been built in so many places on the Continent, for the purpose of carrying out under the most favourable conditions the open-air treatment of consumption. The details of these must necessarily vary very considerably according to climatic conditions. The sort of building and arrangements which would be suitable for Italy or Spain would hardly be suitable for Scotland. Still making due allowance for climatic differences, the object of these institutions being similar, the sanitary, domestic and medical arrangements must be very similar. The press and public have, as might be expected, taken an acute interest in the proceedings of the Congress; for it is fully realised that tuberculosis is the most formidable and most insidious foe to health, happiness, usefulness and longevity which affects humanity, and it is also clearly understood that the hope of combating this foe rests more upon an intelligent and widespread knowledge of the methods by which it makes its approaches and attacks, and upon personal and domestic efforts to anticipate and thwart these than upon any agencies which the State or the community or sanitary services can call into operation.

PREVENTIVE INOCULATION AGAINST ENTERIC FEVER.

It will be within the recollection of your readers that Professor Wright, of Netley, devoted all the leisure which he could snatch from his plague duties in India to investigating the effect of anti-typhoid inoculation and endeavouring to persuade British soldiers to submit themselves to the process. The evidence which he collected as to the immunity conferred by inoculation was very favourable, and he succeeded in getting large numbers of soldiers to submit to the operation. His enthusiasm and persistence have been re-

warded by obtaining encouragement and help from the highest Military authorities, who are now fully persuaded that no harm has resulted from these inoculations in any single instance, and that their prophylactic value has been sufficiently demonstrated to justify further trials on a large scale. The process is not to be made compulsory, but it is considered right that all facilities should be offered to soldiers willing to undergo the operation, more especially when they are about to proceed to places or on service which sore experience has declared to expose them to risks of typhoid infection. Seeing that about one-third of the mortality of the army is caused by enteric fever, the adoption of any measure which gives promise of immunity commends itself, as not only justifiable but also as eminently desirable. India holds a high position in respect to typhoid mortality and will probably constitute the principal field of anti-typhoid inoculations. Evidence regarding the result of these ought to be sedulously collected and made known, whether favourable or the reverse; and it is to be hoped that all who have the opportunity will aid in the movement and keenly watch its results.

A LIFE ASSURANCE CONGRESS.

A meeting of the International Life Assurance Congress is to be held at Brussels in September. The programme of proceedings includes many matters regarding which medical examiners are often greatly exercised, such as the eligibility of syphilitics, alcoholics, neurasthenics, albuminurics and glycosurics, persons with faulty hearts, persons with a tuberculous family history and so forth. While in doubtful cases much must be left to the judgment of the examiner, it seems very desirable that rules based on experience should be laid down to assist in pronouncing with some degree of uniformity, and certainly on cases which lie near the border line separating acceptance and rejection. A curious suggestion has come from America regarding the employment of the tuberculin test, which is at present limited to suspected tuberculosis in cattle, in doubtful instances with strong hereditary proclivity.

This test would, as among cattle, undoubtedly detect the actually tuberculous, but the question of the degree of ineligibility or risk arising from a strong tuberculous family history would still remain, even were the individual acquitted of

positive infection. Moreover, it is very doubtful whether candidates for insurance, would submit to a test not devoid of inconvenience and perhaps danger.

K. McL.

8th June, 1899.

Current Topics.

SCARLATINA IN INDIA.

WE would invite the special attention of our readers to the important article on Scarlatina in India by Drs. Cook and Caddy in our present issue. Their researches, confirmed by bacteriological experiment, make it evident that, contrary to the current opinion, scarlatina does occur in India, in cases apparently independent of infection from Europe; and that it is probably confused with dengue, rubeola, &c. This subject is well deserving of full enquiry, and with this view we enclose here, on a separate slip, a series of questions, which we hope our readers will answer and fill up and return to us, when we shall be happy to publish the results, as a basis for further enquiry.

MEDICAL TERMS AS INVECTIVE.

THE following delicious effusion was lately received by an administrative medical officer in India praying for the removal of a native subordinate in favour of a rival:—

"We the inhabitants of are perfectly at a loss to account for the anomalous (*sic*) arrangements resorted to by Government of late. has from time to time immemorial gained the world-wide notoriety of being a fever-stricken and malarious district. Sober reason and sane thinking would lead an ordinary mind to station an active and energetic doctor at; but by some occult and mysterious process of thought, the higher authorities have taken it to their fancy to post a super-annuated lethargic, diabetic, worn out, dry stick of humanity at a station which, to say the least of it, is the most unhealthy district in and the atmosphere whereof is impregnated and saturated with all the germs and bacilli of all the toxins pronounced to be most fatal to mankind. It is a patent fact that the number of patients admitted to the Hospital is decidedly very great, but there has been an appreciable fall in the number since the advent of the present incumbent. The causes of this desertion though obvious are the foul-mouthed vituperations, peevish revilings and the short temper of the old diabetic Esculapius who has grown rabid with the rise of the temperature in this hottest part of the season. There is a rumour in vogue that officers when old are compelled by Government to retire from service, but

the continuance of this octogenarian (sic he was only about fifty) in service gives a direct lie to the long-cherished opinion of the public in general. We beg most respectfully to pray that you will be graciously pleased to consider this hard case, and see your way to ridding us of this old man of the woods."

ON MARCHING.

IN his address to the United Service Institution of India, Major B. M. Skinner, R.A.M.C., gives some practical suggestions on this important military subject from its medical point of view. He says: The marching power of a unit may be defined as not only the power of arriving at a certain point after a day's march, but the power of arriving there in such a condition that it is fit for further and prolonged exertion which may be required to be sustained for some days. Consequently the utility of a unit depends not on its power only of doing so many miles an hour during a march between two points, but on its potential energy on the completion of such a march. Practically applied, this means that the unit should have been trained to march in such a way that on the completion of a march it may have a reserve-fund of energy well in hand; the larger the reserve, the better the unit for war purposes. In order to obtain this reserve, the unit must have been trained in marching, and must have studied all the points bearing on marching, in order to make use of those points which will conserve energy, and in order to get rid of, or minimise the effects of, those factors which reduce energy.

As the power of mobility is as necessary to the efficiency of a body of infantry as the power to use the rifle, the training in marching during peace time should be carried out as assiduously as rifle practice; units should be marched out at least three times a week, even in hot weather, and at a pace which will be something quicker than that they will adopt when on field service. If this leads to men falling out—well, such men are well rid of at the time; and further, such men should be put through a special course of training to enable them to pull along without falling out on other occasions. One of the prime factors leading to success in performance is the wish to do a thing—keenness; every effort should be made to produce this attribute. The system of putting off marching or field days, because the weather is warm, "on medical grounds," is one which cannot but conduce to the enervation of the soldier. His profession is one of marching, and of marching at times in the greatest heat, and his training should lead up to that; he should not expect to be put to bed when the weather is warm. At the same time let him have all necessary medical assistance during his training; those who break down should be taken care of as a matter of course,

but on recovery their training should be resumed as before. By this means, during peace, a body of men is put into condition for the hardships of war, and instead of field service resulting in the disintegration of units through inability of the soldier to stand the work, as is the case at present, it will be found that the loss through fatigue will be reduced to a minimum. Overfatigue, causing inability to sleep, loss of appetite, reduces the soldier, and renders him an easy prey to disease.

During peace-time marches, when in cantonments, units do well to train themselves up to their maximum of speed—a speed which may sometimes be required on service to attain some special object; but generally on field service the pace should be below the maximum; the greater the pace, the greater the proportionate exhaustion. What is then required is an easy pace, so that the soldier may arrive at his destination with a reserve-fund of energy to enable him to settle his camp; and, if necessary, to fight a battle with grater credit to himself than he would do if played out by excessive previous efforts. Probably three miles an hour, including halts, would be a good rate of marching, it being understood that this is intended as the pace of the rear of the column. Troops in cantonments should be trained to march at least four miles an hour if they are to be in training for taking the field in an athletic condition. Troops not in an athletic condition had much better stay at home, as they are a burden to themselves, and an incumbrance in the field; they obstruct the column of which they may form a part; they are useless for fatigues; they fill the hospitals, and cumber the line of communications by passing backwards when sick, and forwards again on discharge from the base.

Taking it for granted that on starting on the march the soldier is a healthy man, the points to be considered as bearing on his capability of carrying the march out successfully are: his boots, the fit of his clothing, his accoutrements, his food, and his drink.

The boots supplied to soldiers are of excellent material, and if properly fitted, leave nothing to be desired. It is understood that no officer would think of allowing his men to march in brand new boots; they should, however, be in good condition, and should have been worn sufficiently to have adapted themselves to the feet of the individual. Peshawar nails driven into the soles and heels make the boots more durable, and for hill-work enable the wearer to get a firmer footing on the rocks. The question of chaplis, with leather socks, may be disregarded for British troops, as having no points of advantage over the army boot as far as the soldier is concerned, being less durable, having no heels, and also entailing an issue of an unaccustomed article. Thick socks should be worn,

and on completion of the day's work should be removed and dried. Highland shoes appear not to be so durable as the army boots, and are liable to admit fine gravel which works up beneath the spats.

When, during a march, a blister has been raised, it should be treated at once, and there is no better treatment than the old German method of running a thread of silk through the blister and leaving it in, tying the ends so as to form a small loose loop. A carbolised ointment spread thickly on the sock exactly over the injured spot forms the best dressing.

The *khaki* jacket should be built loose about the chest, and especially so about the collar; and the trousers should also be fairly loose so as to allow of free movement about the knee, and also when stooping. The *putties* should be carefully and evenly wound, and securely tied, to obviate the discomfort of frequent re-adjustment. Other kinds of dress need not be considered here, as likely to cause controversy.

The soldier's accoutrements are probably as good as can be obtained for the purposes required. It may be suggested, however, that hooks on the waist of the *khaki* jacket would probably be found to help to support the belt, and to distribute the weight, especially when the soldier is carrying his 100 rounds.

The question of head dress is one that is always to the front in India. The present helmet is disliked by all practical soldiers as being an unserviceable article. A cover after the model of the Cawnpore Tent Club hat has been suggested, but would be found to be too cumbersome, delicate in structure, and liable to spoil in wet weather; when lying down to shoot it gets in the way. Perhaps a hat which is softer round the temples may be found in other respects adaptable to this climate, such as the Jameson hat worn in sub-tropical regions in South Africa.

Regular hours for feeding should be maintained as far as possible in war as in peace. When reconnaissances or other movements are carried out which are likely to be prolonged over the hours of a regular meal, a cold ration at least should be carried in the haversack. There are no points of merit, nor is there any advantage in testing endurance in allowing soldiers to carry out a move, and perhaps return from an action, with empty stomachs. During night marches, when away from the front, the coffee shop should always be at hand at "half-road," with a supply of biscuits and hot tea; and when in the vicinity of an enemy, the biscuit should be at hand in the haversack, and cold tea in the water-bottle, for consumption at some arranged period during the march. If the night march is commenced, say after 3 A.M., the "gunfire" tea should be consumed before starting, with a biscuit, when nothing more will be required until the breakfast hour.

The question of drinking when marching is one that requires some training among the uneducated or unaccustomed. No sportsman, or pedestrian accustomed to his work, will dream of constantly carrying his water-bottle to his lips. He will walk for hours without a drink, and when he takes a drink, he will halt to do so, take sufficient to quench his thirst, and wait a short time till he is rested, during which rest much of the liquid will be absorbed, before again proceeding. Most soldiers, after three or four miles of a march, have commenced and sometimes even emptied their water-bottles; they re-fill at the first opportunity, and from the nearest source, whether *bhisti's* massak or road-side puddle; and by the time half the march is over, their stomachs are filled with water, the distension oppresses the breathing and the heart's action, and one by one they fall out feeling "done up." So much is this the case that the writer has come to look upon the water-bottle as used by most soldiers as a serious impediment; and believes that if the private could be trained to keep his supply of water or cold tea till he reached "half-road," his marching powers would be much enhanced. That this can be done is shown by the fact that the colonel commanding a British infantry regiment has trained his men to march without drinking except at stated times. Besides the ill-effects mentioned above of constantly drinking, is the resultant evil of obtaining water from sources along the road which are likely to contain not only specific poisons, but also living organisms of a coarser type. In order to keep off thirst, or what is frequently mistaken as such, namely, a dry tongue, the mouth should be kept shut, the breathing being carried out entirely through the nose, for which purpose the latter organ is supplied; thus dust is kept from the tongue and throat, and the air which by causing evaporation dries the tongue and throat, while it does not dry the nose, is excluded. An empty pipe held between the teeth will assist in the desired effect. Smoking, even for habitual smokers, is better not indulged in except at halts; in moderation it will moisten the mouth by causing the saliva to flow. Probably the best drink to carry in the water-bottle is cold weak tea.

THE EDEN HILL-SANITARIUM.

DURING the past year the number of patients admitted into this European sanitarium at Darjeeling was higher than that of any preceding year, but there was a considerable decrease in the number of relatives and attendants. Of the total number of patients treated, 313 were adults and 63 children, against 291 adults and 65 children in the previous year. The daily average number of patients shows an increase from 37 to 42. There are seven free beds, four of which are maintained for the benefit of the

Calcutta hospitals, and three cots for children which are supported by three Memorial Funds. A sum of Rs. 500 is placed at the disposal of the Superintendent should he require it for three beds. The daily average number of free patients was under five. All the occupants of the free beds come from Calcutta. The necessity for providing hospital accommodation for Europeans at Darjeeling, induced the Lieutenant-Governor, after an inspection of the sanitarium building, in consultation with Colonel Hendley, to decide that a new block, containing an operating-room, four bed-rooms for patients, and quarters for two nurses, should be constructed from provincial funds at an estimated cost of Rs. 10,000, subject to the conditions that sick persons be admitted at all times of the year; that patients who are unable to pay the usual charges be admitted and treated free of cost, and that the committee bear the cost of equipping the new block. These conditions have been accepted by the Managing Committee. When the new section is completed, it will remove a long-felt want and add materially to the usefulness of the institution.

As this sanitarium has proved to be such a boon to sick Europeans in Bengal, it is proposed to establish a similar institution at Simla. If accepted, it will place the present Ripon Hospital entirely at the disposal of the native community—a purpose for which it was originally intended, and for which it is now much needed.

POISONING IN THE PUNJAB.

"THE prevalence of poisoning in this Province is a grave and ominous phenomenon, and its regular fluctuations point to the presence of underlying causes, which it would be most interesting to discover." So writes the Chemical Examiner to the Punjab Government in his report for 1898. Poisoning cases appear to run in cycles of three years, and last year the total number of cases submitted for examination was 1,354, as compared with 1,448 in 1897, a decrease of ninety-four. The number apparently might be still further reduced, if greater care were exercised against submitting unnecessary cases. Major Grant gives a list of thirty-seven cases sent to him for analysis, in which death was clearly due to quite other causes, such as strangulation, hanging, drowning, and so forth. The Officiating Inspector-General of Hospitals, in his covering letter to Government, says that, where such carelessness is shown, his attention should be immediately called, so that "useful" action may be taken. These complaints against the police of burdening the laboratory with unnecessary work are not new, but it is not always possible for them to decide whether a case, presumably due to natural causes, ought not to be submitted to analysis. For, as is pointed out in Government's remarks on the report, the

ascription of every death, not palpably the result of violence, to "fever" is almost universal amongst the natives, and "circumstances are conceivable under which it would be right to forward to the Chemical Examiner the viscera of a person whose body exhibited some indications of death by drowning. The percentage of detections continues high. In human cases it was 73.11, as against 73.71 in the previous year.

CARRIAGE OF ACIDS BY RAIL.

MISCONCEPTION as to the correct interpretation of the word "concentrated" as applied to mineral acids in the general rules as to the working of railways has led to the adoption of different methods of packing acids for transit by rail. The Government of India has therefore issued a resolution defining the epithet "concentrated" as applicable in this connection only to hydrochloric, sulphuric, and nitric acids. These acids will in future come under the more stringent rules with regard to packing on all railways; the less stringent method of packing being considered sufficient for other acids.

THE AIR OF THE BLACK HOLE OF CALCUTTA.

RECENT experiments in regard to the processes of respiration show that poisonous leucomaines, allied to the alkaloids and the ptomaines of putrefaction, arise within the body by respirating oxidation and are expired in a volatile form. The deadly effects of the atmosphere of the 'Black Hole' of Calcutta was doubtless largely due to these poisonous leucomaines, and not merely to the expired carbonic acid as hitherto supposed.

FEMALE infanticide is now stated to be but little practised in the North-West Provinces. Two years ago the Act was in force in 500 villages with a total population of 77,793; last year the number had dwindled to 415 villages and the population under surveillance to 59,937. The administration report states that "the figures of the year were satisfactory, not only as showing a natural increase in the number of girls as compared with the boy population but also on account of the low death-rate of female children in proclaimed villages." In one or two districts, however, "renewed efforts" for the suppression of the crime are said to be called for on the part of the authorities.

THE irrigating needles and nozzles for Dr. McKeown's operations for 'Unripe Cataract,' in regard to which we remarked, in noticing his book in March last, that there was no indication as to where they were obtainable, are, we are now informed, to be got from Messrs. John Clarke & Co., Victoria St., Belfast.

IN referring to Major Pratt's description of his new operation for the radical treatment of hydrocele which lately appeared in these pages, the *British Medical Journal* in a recent issue says "he excises the scrotum—this of course is an absurd mistake for 'incises.'"

M. HAFKINE delivered a lecture on his 'preventive inoculation' for the Plague and Cholera at the Royal Society, London, June 8th.

COLONEL KENNETH MCLEOD, I.M.S., M.D., LL.D., F.R.C.S., Edin., is the Vice-President elect of the Section of Tropical Diseases at the Portsmouth Meeting of the British Medical Association.

Reviews.

Varix and Thrombosis.—By W. H. BENNETT, F.R.C.S., St. George's Hospital. London: LONGMANS GREEN & Co., 1898.

THIS admirable little volume is a reprint of an address delivered last year by Mr. W. H. Bennett, F.R.C.S., which our readers probably remember reading in the *Lancet* in October, 1898. The author has already published more than one monograph on this and allied subjects, and like everything he has written, it is well and clearly expressed. He divides varicose veins into four classes: (1) congenital; (2) those due to obstruction of the blood current; (3) those caused by strain without thrombosis (traumatic); and (4) those the result of thrombosis. The congenital are very common, and are of two kinds: (a) those connected with subcutaneous veins only; (b) those with a direct and gross communication with deep venous trunks; those often seen about inner side of the knee are examples of the latter kind. Mr. Bennett believes that heredity is a considerable factor. The varicose veins which are caused by pressure are best known in the varix resulting from pressure of a gravid uterus or other tumours. As regards those caused by strain, these are common in athletes, football players or those who lift heavy weights, &c. They are due, Mr. Bennett thinks, to the giving way of the vein-valves. The importance of thrombosis in the causation of a certain type of varicosity is not commonly recognised. Thrombosis of the main deep veins, the venae comites of the posterior tibial artery, for example, is common, and the saphenal dilatation is merely the result of the establishment of the collateral circulation.

The dangers to life, Mr. Bennett points out, from varicose veins are the occurrence of profuse bleeding, and formation of a thrombus which may extend or may detach emboli. Therefore a recent clot in varicose veins of the thigh or at the knee is always a serious, and sometimes a fatal lesion. Mr. Bennett defines the "danger-

ous region in varix," as the inner half of the circumference of the lower limb marked off by two lines, one about the middle of the thigh and the other three inches below the line of the knee-joint—the term 'dangerous' being implied to mean either risk to life or to the integrity of the limb. All the various types of varix are illustrated by figures. As regards the treatment, it is palliative and operative. In individuals following ordinary occupations, varix which causes no trouble and is not increasing should be left alone. Nothing does so much harm, in Mr. Bennett's opinion, as the routine use of an elastic support, "it is one of the most difficult of appliances to obtain perfect."

Regarding operative treatment two points must be remembered: (1) that if the saphena in the thigh is involved, operation will not necessarily enable an elastic support to be dispensed with; (2) in long existing varix, operation, though it gives great relief, will not necessarily make the patient a sound person. Mr. Bennett's favourite operation is to excise a portion of the saphena extending from the point below the knee at which the two venous trunks from the leg join to a point a little above the lowest third of the thigh.

We have thus briefly indicated the features of this useful little book which is certainly to be recommended to the Surgeon. The book is beautifully printed, and its get-up reflects credit upon the publishers.

"La Maladie de Carrion ou la Verruga Peruvienne."—By E. ODRIOZOLA. Paris: Carré et Naud.

THIS work forms the most complete account yet published of Verruga, and will enable the reader to form a definite idea of a disease of which so many conflicting and inaccurate accounts have been written.

After a history of the disease, the author devotes some thirty pages to an account of its geographical distribution, which may be briefly summed up as the western water-shed of the Peruvian Andes, especially certain "quebradas," or narrow and deep valleys, or ravines among the mountains.

The author classes verruga among the specific fevers. Its histopathology, its varied duration and symptoms incline us, even on the author's own evidence, to rather place it among the infective granulomata.

He describes two forms of the disease, while careful to explain that there is no rigid boundary between them and that one form frequently passes into the other:

(1) Pernicious ("grave") fever of Carrion, the misnamed "Oroya" fever.

(2) The eruptive form, Verruga.

In both forms anæmia is marked, and hæmorrhages not infrequent.

The symptoms of the severe form are an irregular fever usually reaching 104° F. Severe

muscular and articular pains, hæmorrhages from the mucous membranes, enlargement of the liver, spleen and lymphatic glands.

Great loss of strength, profound anæmia, and as a result œdema, hæmic murmurs, giddiness and fainting.

The fever may end by crisis or by lysis, a crop of verrugas often comes out and the patient slowly recovers; or the verrugas may be "suppressed," the patient sink into a typhoid condition and die in low delirium or coma.

Our author is anxious to impress on us that the fever is not a preliminary stage to be succeeded by an eruption, but that it is the disease itself, is usually accompanied by one or two small verrugas, and may come on at any period, before, during or after an eruption.

Post mortem.—The most striking signs are the anæmia, and engorgement of the blood-forming organs. In one case of "grave fever," the author found numerous "verrugas," the size of a pea in the muscles of the lower extremities.

In the more chronic eruptive form, "verrugas" have been found in most of the viscera, on the serous and mucous membranes as well as the skin, bones, connective tissues and muscles.

Our author—perhaps it is the printer's fault—here and there contradicts himself. Thus on p. 165, he says in Case I: "Verrugas were seated on the peritoneum covering the spleen, and also on the kidneys."

On referring to Case I, p. 83, we find he describes the appearance of the spleen and kidneys and not only makes no mention of any verrugas, but expressly adds "having nowhere found verrugas, we pushed our search further and found them in the muscles of the thigh and leg." He says this is the first time they have been found in the muscles, May 1893.

Yet on page 165, he says they "develop frequently in the muscles."

It is strange that European writers persist in giving dysphagia as a characteristic symptom.

Radcliffe Crocker says, "a cramp-like contraction of the gullet is the most characteristic" symptom.

Dounon says it is a very common symptom.

The latest writers, Manson and Firth, perpetuate the statement; the former says, it is "a common symptom;" the latter (Allbutt's System of Medicine) "A characteristic and early symptom is dysphagia."

In no Peruvian author can we find this confirmed.

Castillo never once found it in 100 cases. Our author in 250 cases found dysphagia only once, in a case in which the palate and back of the pharynx certainly, and the œsophagus probably, were the seat of verrugas. He expressly states that dysphagia is an "exceedingly rare" symptom.

It is amazing that verruga should be now-a-days regarded as identical with yaws, yet in

recent text-books the error is perpetuated. In McCall Anderson's "Diseases of the Skin," Turner gives verruga and yaws as "synonyms."

Manson in "Tropical Diseases" says, "if difference there be between verruga and yaws, apparently it is more one of degree than of kind."

Castillo gives the mortality of Oroya fever as 85 to 90 per cent.

In yaws we never meet a fatal case; in yaws the viscera and mucous membranes are spared. In verruga they are usually implicated.

But quite apart from this the eruptions of the two diseases have little in common.

The "yaw" attacks the skin as a papule, then breaks through the epidermis, and is a mass of granulation either covered by a scab, or raw and bare in its whole extent; after the papular stage it is *entirely uncovered by epidermis*.

On the contrary, the verruga is frequently subcutaneous, covered by healthy skin, or occupies both the subcutaneous tissue and the derma above which it projects, as a *smooth, shiny*, tense or semi-fluctuating tumor covered by the unbroken epidermis.

The epidermis may subsequently break, but our author regards "hæmorrhage, ulceration, gangrene, desquamation as secondary accidents."

The formation of a pedicle and the dropping off *en masse* of the tumor, a frequent occurrence in verruga, is never seen in yaws.

Professor Letulle, of Paris, contributes a chapter, illustrated by excellent plates, on the histopathology of some tumors sent him by the author.

He confirms Izquierdo's account of a bacillus resembling in shape and staining reactions the *b. tuberculosis*.

The appearance of the eruption is shown by two coloured plates and a dozen beautiful reproductions of photographs.

The author is anxious to perpetuate the memory of Carrion by calling verrugas "Carrion's Disease." Though the name is suggestive of sapræmia to the Saxon reader, it is preferable to "Verruga Peruviana," as the eruption is not a papilloma, and to "Oroya fever" as the disease is unknown in Oroya.

This name was derived from the fact that the workmen engaged in making the railway from Lima to Oroya were frequently attacked by the pernicious form of the disease.

The Exploration of the Urethra and Bladder.—By M. TUCHMAN, M.R.C.S. London: H. K. LEWIS, 1899.

In this little volume, Dr. Tuchman, of the German Hospital, Dalston, describes, from a surgical point of view, the anatomy of the bladder and urethra, more especially with the purpose

of demonstrating the possibility of laying hold of one ureter for diagnostic purposes. Very detailed descriptions are given of the manipulations necessary to effect this end with the aid of the author's own invention, the "ureter-forceps." The beak of this instrument consists of two blades; the curved ends of two tubes, curved to the shaft at an angle of 115 degrees. These work with a screw and spring, and, as is shown in the diagrams, one or other ureter can be gripped and kept closed for 15 minutes with these blades, while the urine from the other kidney is secreted and collected. Our author claims that the manoeuvre is easily learnt, and is less difficult than seizing a small stone with the lithotrite, because the valve is always in the same place and cannot slip away.

There is no doubt that this manipulation must be useful at times, and the little book, excellently brought out by H. K. Lewis & Co., may be commended to those surgeons, who have acquired a *tactus cruditus* with bladder instruments.

Manual of the Practice of Medicine.—By DR. F. TAYLOR. 5th Edition. J. & A. CHURCHILL, London, 1898. Pp. 972. Price 16s.

THE fifth edition of Dr. Frederick Taylor's well-known manual contains 972 pages, of which 162 are devoted to the consideration of infectious diseases, and 217 to diseases affecting the nervous system. The manual, which has been carefully revised, is well up to date, and includes notices of the following diseases recently recognised or omitted from former editions, (a) glandular fever described by Pfeiffer, Park, West, Dawson, Williams and others, affecting, chiefly, children under fourteen years of age; (b) Divers' paralysis; (c) erythrometalgia, an affection of the feet and legs, so-called by Weir Mitchell, the precise cause of which is not known; (d) angio-neurotic oedema, in which circumscribed swellings appear on various parts of the body, for instance, on the face, the eyelids, the hands, or legs, or in the throat; (e) hypertrophic pulmonary osteo-arthritis, a condition of enlargement of the bones, which is most obvious in the hands and feet, and occurs in cases of chronic pulmonary disease, such as phthisis, empyema, and chronic bronchitis; and (f) tuberculosis of the skin, the various other affections of which have been dealt with in an interesting manner. It is written in a clear and concise style, is well printed and of portable size. It is a statement of facts and not an elaborate discussion of theories, and should prove an admirable text-book for the use of students and as a work of reference may be recommended, also, to the notice of the busy general practitioner. The manual is particularly well-adapted for use in India on account of the information regarding tropical diseases which it contains.

Notes on Surgery for Nurses.—By JOSEPH BELL, M.D., F.R.C.S., Edinburgh, Consulting Surgeon to the Royal Infirmary, Edinburgh: Messrs. OLIVER and BOYD, Tweeddale Court, 1899. 5th Edition.

THESE notes embrace the main points of the lectures delivered to the Nursing Staff of the Edinburgh Royal Infirmary by Dr. Bell, and were first published in 1887. In the present—the fifth edition—they have been revised and an appendix added. The notes are useful and instructive. They are well calculated, as their author hoped and as experience has proved, to sufficiently aid nurses who take an interest in their duties to understand their cases and to follow intelligently the clinical work in the wards. They teach a nurse moreover the essentials of antiseptics and asepsis, and show her what an important part she can play in the success or failure of surgery in her hospital. It is very difficult to us to-day to realise Dr. Bell's statement that little more than thirty years ago he saw the dressing done, assisted by *ward sponges* carried from bed to bed in ward basins, and that it was not considered necessary, not even advisable, to change the water on passing from patient to patient! Those were the days of sloughing phagedœna and pyæmia. The chapter on General Advice to Nurses, and the Appendix treating of the important and interesting questions raised as to the Relation of the Trained Nurse to the Profession and the Public, are so full of friendly counsel and excellent advice that they should be reprinted and given to every nurse entering on her duties. The public to whom she ministers would also be the better for reading them. Too many nurses, when they have learnt all that a three years' course—'medical training' such women are fond of mis-calling it—can teach them, go forth with an exaggerated sense of their knowledge and position which would be ludicrous were it not so often mischievous. To such also we commend Dr. Bell's words of wisdom. The qualities required in a nurse are high and varied; tact, perfect health, experience, modesty, loyalty, sympathy, reserve are some of them; and it is much to the credit of the nursing profession that these precious gifts are as frequently met with as they undoubtedly are.

A Record of Indian Fevers.—By Major D. B. SPENCER, I.M.S. Calcutta: THACKER, SPINK & Co. 1899. Price Rs. 4.

THIS booklet is an attempt to differentiate by clinical means one or more fevers from the maze of Indian diseases, and for this reason deserves attention.

It is accompanied by a collection of 16 temperature charts (which we would have preferred to see incorporated in the text on a reduced scale) of the following Indian fevers: simple continued fever, quotidian, tertian, and quartan ague, irregular malaria, four types of

remittent fever, chronic ague, enteric fever, and three charts of what our author calls "Tropical Fever." It is to the latter fever that we propose to devote most attention.

The volume begins with some remarks upon "simple continued fever," which Dr. Spencer truly recognised as a very vague term. We all admit the occurrence of a febricula or ephemeral fever, but to this the term "continued" is entirely inapplicable. This term was at one time much abused, especially in the returns of the British Army, partly on account of its non-committing simplicity, and partly because of the iron-bound necessity of adhering to the numbers and names of that wonderful production the "Nomenclature of Disease." Major Spencer considers that only short ephemeral fevers should be included under this too elastic term; he inclines to consider fevers lasting two or three weeks to belong to the type he proposes to call 'tropical.'

Tropical fever is here defined to be a fever of a continued type lasting about a week, liable to internal complications such as pneumonia and enteritis, not malarial and not true enteric, not contagious nor infectious, but caused by severe blood-poisoning from the intestinal canal.

To explain its etiology Major Spencer invokes the attractive auto-intoxication theory of which so much has been heard of late years, and to which Major Ronald Ross called attention in our columns in 1892 as a factor in Indian fevers. Major Spencer likewise believes that when the eliminative function of the skin in the Tropics is from any cause disordered, effete matters are retained or thrown back into the blood. Following on this is a fermentation and putrefaction of the intestinal contents; ptomaines, &c., find their way into the circulation and maintain the fever. In fact, to use Lauder Brunton's expression (quoted by our author), this fever is the result of "intestinal sewage poisoning." This fever, Dr. Spencer thinks, might even be called "Ptomaine Fever." In fine the difference between Dr. Spencer's "Tropical Fever" and "Enteric Fever" is that the former is formed in sewage inside, and the latter in sewage outside, the body; for our author announces himself as an adherent of Murchison's pythogenic theory, basing his opinion on what seems to us to be the insufficient grounds that (a) the bacillus of Eberth is seldom found in the drinking water impugned; and (b) because enteric fever has seldom been experimentally produced in the lower animals. We have not space here to show that these arguments are of minor importance, and, in fact, our columns have shown that experimental typhoid has been produced. (*J. M. G.*, 1898, p. 112.)

When we come to examine the three charts which Major Spencer gives to establish the existence of this fever, we find unfortunately that they have little resemblance to one another, even in the less important point of having

similar (morning and evening) temperature charts. We may quote the synopsis given at foot of Chart viii (a): "A history of exposure to the sun at musketry—previous history good. Chief clinical features—a continued pyrexia with moderate constitutional disturbance, no urgent symptoms of any kind, temperature chart irregular; no eruption; no jaundice; bowels, if anything, constipated till about 27th day of disease; had some delirium with dry tongue about 10th-11th day, but the typhoid state was not marked till about 27th day, when diarrhoea set in with a steady rise of temperature, followed by exhaustion and death on 29th day. *Post mortem*. Typical ulceration of Peyer's patches and solitary glands, though not confined to the glandular structure; mesenteric glands enlarged; spleen and liver congested and enlarged; frothy accumulation of bile in small and large intestines, of bright yellow colour." This case was met with in a native soldier in the non-malarial month of January. Most persons would be inclined to diagnose enteric fever at once, but there was no eruption, no epistaxis, no intestinal hæmorrhage and the pain in iliac region; the gurgling with tympanites and diarrhoea did not occur till very near the end of the disease. The second case, of which a chart is given, does not resemble the above—the fever lasted only six days; pneumonia is said to have been a "complication," but it is claimed that the happy result was due to the eliminative treatment used. A sceptical disposition might maintain that pneumonia was the whole disease. The third case (viii, c) has a chart not unlike the second, but there was no lung complication; the fever lasted for eight days, but was followed by 22 days more of a very low fever, always under 99° F. Epistaxis occurred on seventh day.

To maintain, as Major Spencer does, that these three charts represent the same type of fever, and that the short pyrexial period of the last two is due to the form of treatment applied is perilously like begging the question.

The first case is most interesting, and many will recall similar cases even without the Peyerean ulceration. That some such fever exists as yet undifferentiated is our firm belief, but many more cases and charts must be produced before such a proposition can be established. It is, as Dr. Crombie has said, a mistake to suppose that the whole pathology of continued fevers in India is summed up in the Eberth bacillus.

We have every sympathy with Major Spencer in his endeavour to differentiate a new fever by means of clinical observation alone. It is not his fault that the Widal test is practically impossible for medical officers in India. How long such a disgraceful state of affairs is to last in India we know not; but it is a serious handicap on medical men, especially in a country where enteric fever is so specially a scourge.

We have no space left to discuss Major Spencer's remarks upon other fevers. He gives one example of the combined typhoid and malarial infection, which we commented upon in a recent editorial; but such a case has no more right to the hybrid term "typho-malaria" than a combination of enteric and scarlet fevers to be called "typho-scarlatina." Major Spencer is more confident than we ourselves could be about the diagnosis of "remittent fever." It is about time that fevers should cease to be diagnosed from a temperature chart, taken morning and evening, and we will hear less of "remittent" and "intermittent" fevers when it is more generally recognised that these types are by no means confined to malarial infections. Here, again, however, we meet with the obstacle of our precious "Nomenclature" which is nowhere so much at sea as in its classification of fevers due to malaria.

We must say a word about some drugs recommended by Major Spencer. We could well spare the list on the last page, where we find 9 antiseptics, 12 diaphoretics, 6 diuretics, 6 hepatic stimulants, and a host of other drugs commended to our attention. However, what is more important, Major Spencer tells us, he finds the use of NEEM oil (*Azadirachta Indica*) very valuable in chronic malaria, where quinine and arsenic have failed. He gives 5 to 10 minims of the pure oil thrice daily in milk or peppermint water. Another remedy he has found useful is Mexican poppy (*Argemone Mexicana*), a common weed in India. Two drachm doses of the leaf-juice he recommends.

On the whole, therefore, while not convinced nor entirely agreeing with Major Spencer's views, we consider his book both useful and suggestive, and it will, we have no doubt, be useful to every medical man in this country who has ever attempted to think out for himself the problem of the unclassified fevers of India.

Current Literature.

MEDICINE.

The Dissemination of Typhoid Fever.—The following are Dr. P. Horton Smith's conclusions in his article (*Lancet*, 20th May 1898) on the relative infectivity of the stools, and urine in typhoid fever.

The conclusions, then, which we are justified in arriving at with regard to the infectious character of the urine in typhoid fever are as follows: (1) It can no longer be doubted that typhoid bacilli occur in the urine of typhoid patients, probably in about 25 per cent. of all cases. (2) For the most part though present in such numbers as to be demonstrated bacteriologically with the greatest ease, they are not present in sufficient quantity to alter the naked-eye appearance of the urine. In a smaller proportion of cases, however—probably about 5 per cent. of all typhoid cases—the urine is rendered turbid by their presence. They are nearly always in pure culture. (3) They occur first late in the disease, rarely if ever before the third week, and

may make their first appearance during convalescence. (4) They generally remain present for some considerable time, for some weeks or even months. (5) The character of the urine does not assist in diagnosing the condition (unless of course it be rendered turbid by the bacilli). It may contain no albumin, often contains but a trace, sometimes has a good deal; and sometimes has pus, all of which conditions occur quite apart from the presence of typhoid bacilli in the urine. (6) The prognosis of a case is not rendered more grave by the occurrence of this condition.

Finally, it may be well to contrast the infectious character of the feces with that possessed by the urine, for in many points the two are dissimilar. In the first place, it must be noticed that whereas the feces contain the typhoid bacilli in apparently every case this does not obtain with the urine. Probably, indeed, in not more than 25 per cent. of all typhoid cases does the urine present this phenomenon. Secondly, typhoid stools are without doubt most dangerous early in the disease—within the first three weeks. The typhoid urine, however, only becomes dangerous towards the end. Thirdly, typhoid stools may contain considerable quantities of typhoid bacilli, but very rarely, if ever, do they contain such myriads as may be present in the urine.

The stools of a typhoid patient separated from the urine contain typhoid bacilli in fair quantities, demonstrable by our present methods up to about the beginning of the third week. After this date the number begins rapidly to diminish, so that our methods no longer avail as a rule to find them. If, however, a relapse occurs it may be preceded by a recrudescence of the typhoid bacilli which can then be found again in the feces, but during the greater part of the relapse itself and throughout convalescence the typhoid bacilli cannot be found in the stools.

It follows from the above that the stools of a typhoid patient must always be regarded as highly infectious during the early stages of the disease, and may again become so in connexion with the commencement of a relapse. This highly infectious character, however, soon becomes greatly diminished, though how soon they become absolutely harmless cannot as yet be settled by bacteriology.

Finally, when typhoid bacilli have been described in the feces long after defervescence—e.g., in Lazarus's case, 41 days after—we are dealing almost certainly with feces contaminated with urine and not with pure feces.

The urine must be treated as infective, hence the importance of Richardson's paper (*Jour. of Experim. Med.*, 1899, p. i). He shows that the administration of urotropin (gr. 10) by the mouth thrice daily absolutely sterilises the urine. This should be given commencing with the third week of the disease. Urotropin (otherwise called formin) is a white soluble body formed by acting on ammonia with formalin. It is held also that it will dissolve uric acid concretions (Whitla).

The German Tuberculosis Congress.—The following summary is given of some of the papers (*Lancet*, June 3rd):—

The Relations between Koch's Bacillus and Tuberculosis.

Professor Fliigge said that it was now an established fact that Koch's bacillus was the cause of different forms of tuberculosis in human beings, of pulmonary, laryngeal, glandular and miliary tuberculosis, and of lupus. In necrotic tuberculous tissue the bacillus perished as had been stated by Professor Koch himself. It had been said by some authorities that there existed other bacilli, which like Koch's bacilli were not destroyed by acids—for instance, the bacillus of lepra and the bacillus in smegma, but after careful examination it had been acknowledged that the biological qualities of these bacilli were quite different from those of Koch's bacilli. By artificial cultures the relations of these different bacilli had been ascertained. The endeavour to refute the doc-

trine of the specificity of Koch's bacillus had, therefore, Professor Flugge considered, been unsuccessful.

The Dissemination of Koch's Bacillus.

Professor Fränkel (Halle) said that not every phthisical patient was a danger to other people. The bacilli were found in the sputa, and they knew by the researches of Dr. Cornet that tuberculosis was spread nearly exclusively by dried sputum. The mode of infection had been ascertained by experiments upon animals; injections of tuberculous cultures produced local tuberculosis, and it was known that children playing on a floor soiled by tubercle bacilli were liable to suffer from tuberculosis of the glands, the bacilli entering through the mucosa of the mouth. Tuberculosis of the lungs was produced by inhalation of tubercle bacilli coming either from dried sputa, as stated by Dr. Cornet, or from minute air-borne particles of water containing bacilli, according to Professor Flugge's opinion. Both modes of infection might be present together. Professor Fränkel finally said that a healthy organism was able to destroy the bacillus and that people living in dirty or badly ventilated dwellings were more susceptible than others.

Heredity, Immunity, and Predisposition.

Professor Löffler (Greifswald) said that heredity had been for a long time believed to be the cause of phthisis. Hereditary tuberculosis, however, was present only when the mother had suffered from tuberculosis of the reproductive organs. A weak constitution might be hereditary and the so-called habitus phthisicus undoubtedly existed. But to this disposition an infection by the tuberculous virus must be added to produce real tuberculosis. It further depended upon the virulence of the bacilli whether tuberculosis might break out or not after the occurrence of infection. He mentioned a case where an entire family had been infected by one phthisical member. A perfunctory examination might have led to the conclusion that these cases were due to heredity. An immunity against tuberculosis did not exist.

An outbreak of Severe Diarrhœa.—In a recently published report, Dr. Fruitet of the French navy describes the circumstances under which a small epidemic broke out in September, 1895, at the military post of Lao-kay (Low Kai) on the Chinese frontier in Tongking. The symptoms observed were cramps in the calves of the legs, vomiting, coldness, and diarrhœa, but in the reporter's opinion as well as in that of two other medical officers the disease was not cholera. The outbreak was spread over ten days, twenty-one cases in all occurring with fifteen deaths. Twelve legionaries (Europeans) who were among the attacked are described as worn out, saturated with malaria (*impaludés*), and nearly all alcoholised. Of these men seven died. The garrison at Lao-Kay, consisting of legionaries, native levies, and prisoners, occupied an old Chinese fort where ventilation was rendered difficult, "if not impossible" by an encircling wall against the outer face of which two filthy Annamite villages were promiscuously huddled. The overcrowding in the sleeping rooms was excessive, the space between the men's beds being only fifty centimetres, or about a foot and a half; while to make matters worse the bedding and mattresses had not been changed or re-made for five or six years. Under these circumstances Dr. Fruitet came to the conclusion that he had to do with pernicious gastro-enteric fever dependent primarily on *impaludism*—to use Dr. Fruitet's words. These cases were probably grave forms of malarial poisoning somewhat simulating cholera, such as have occurred in Indian experience in the valley of Peshawar for example. Had the affection been cholera he thinks that out of a total population of 604 persons more than twenty-one would have suffered. Moreover, cholera is not endemic in the district and has never been seen at Lao-Kay since the post was first occupied ten years ago. The disease always follows watercourses,

but he was assured that all the villages situated upstream were uncontaminated. It was true that a possible source of infection existed in a numerous band of coolies who had lately been brought up to the post from the Hanoi delta by a contractor who had undertaken to build new barracks, but so far as Dr. Fruitet was aware, there was nothing to show that cholera had ever appeared among them. On the whole, although the mere enumeration of the symptoms would inevitably lead persons at a distance to suspect cholera, he felt quite certain that such was not the case, one very important differential sign being the character of the patients' dejections which were scanty and bore no resemblance to rice-water. Prior to the outbreak the water-supply for the fort was drawn from the river close to the bank and after boiling was stored in barrels which were made to act as filters by means of layers of sand, gravel, and charcoal. This system failed to meet with Dr. Fruitet's approval. He condemned the filters altogether, arranged for an in-take nearer mid-stream, and as Chamberland's filters were not available recommended that whatever was left of each day's supply of boiled water should be thrown away having first been utilised for washing out the receptacles. With regard to latrines he advised the suppression of all except those used by the legionaries, but that the native levies should be allowed to use these at night. In the daytime the latter should resort to the river where rafts should be moored for them and also for the inhabitants of the villages who heretofore were in the habit of frequenting the jungles—a most reprehensible practice according to Dr. Fruitet.—(*Archives de Med. Navale*, April 1899 *apud "Lancet"*.)

The Treatment of Dyspepsia.—W. Murrel, M.D., F.R.C.P. (*Med. Press*, Jan. 25, p. 82). Three drops of oil of cajuput on a piece of sugar or on a crumb of bread taken frequently is worth all the other antifermentatives put together. It is not only antiseptic but agreeable. Glycerine is an excellent remedy; a teaspoonful in a wine-glass of water flavoured with a few drops of lemon juice will in many cases effect a speedy cure. Very often the writer uses equal parts of glycerine and glycerine of borax. A useful prescription is, boroglyceride oz. $\frac{1}{2}$, glycerine oz. $\frac{1}{2}$, spt. chloroformi m. xv, syrupi limonis oz. s, aque ad dr. i. Capsicum is most useful in alcoholic dyspepsia and in the gastritis of drunkards. Minim or two minim doses are ample, but the tincture must never be given in an effervescing mixture or the patient may be blinded. Stimulating the mucous membrane of the stomach by the application of tincture of iodine is a good practice. The writer orders ten minims of tincture of iodine in an ounce of water, with half a drachm of glycerine. It is administered before food, and the patient is directed to roll over from side to side once or twice so as to diffuse it evenly all over the stomach. It produces no pain but only a pleasant sensation of warmth, and he has never known it do any harm even when ulceration was suspected. Prof. T. R. Fraser has shown that bichromate of potassium is capable often in a short time of removing all the symptoms of dyspepsia, especially anorexia, pain, nausea, vomiting, and gastric tenderness. It should be administered fasting in doses of from one-twelfth grain to one-sixth grain, either in solution or in pill, three times a day. The solution may be flavoured with syrup of tolu or orange, and the pills are best made with kaolin ointment. In gastric ulcer the results are just as favourable as in simple dyspepsia excepting that hæmatemesis is not checked.

Probably the worst fault in the treatment of dyspepsia is prescribing pepsin without explicit directions as to the kind. There are pepsins and pepsins; some are excellent, whilst others are practically useless. The estimation of the comparative value of different preparations is by no means easy. It may be done with egg-albumin. The eggs must be fresh and should be

boiled in a uniform manner. The best way is to boil the water first; and then put the eggs in together, and let them boil for ten minutes. If a shorter time is allowed, the white will not separate from the yolk cleanly. The best test is the weight of albumen which one grain of pepsin will digest in four hours in eight ounces of 1 per cent. hydrochloric acid of sp. gr. 1.150 at a temperature of 38 deg. C. Some time ago the writer tested all the pepsins in the market, and the difference in activity was so startling that now he never prescribes pepsin without indicating the particular make, and previously ascertaining its power. Another mistake commonly made is to give it in too small doses.—(*Med. and Surg. Rev. of Reviews*, April 1899.)

Chronic Venereal Sores.—Lt.-Col. Maitland in *Lancet* (17th June 1899) returns to the question of the identity of what he calls chronic venereal sores with the "groin ulceration" of Guiana. This article has a note added by Dr. J. Galloway who originally described the microscopic appearances of the growths as seen in Guiana. Galloway concludes that there is, no doubt, but that the "chronic venereal sores" described by Maitland and also by K. Macleod in this *Gazette* are identical with the groin ulceration of Guiana. At the Clinical Society of Manchester, Dr. Lloyd-Roberts described a tumour growing from the labia minora not unlike the above, he called it elephantiasis of vulva. The mass was composed of fibrous tissue. He states that "these growths are usually caused by the irritation of venereal discharges or by traumatism." Excision is the only treatment.—(*v. Med. and Surg. Review of Reviews*, April 1899.)

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SPECIAL SENSES.

Empyema of the Frontal Sinuses and Intracranial Infection.—Dr. C. L. Gibson (*American Journal of the Medical Sciences*, March 1899) reports at length a case of this comparatively rare condition. The patient, a man aged 32, had an abscess opened at the inner angle of the left orbit. A sinus persisted and a year later the left frontal sinus was trephined and external drainage (not through the nose) established. No relief followed. For two years he had polypi removed from the nose and latterly he had persistent right frontal headache. At the operation the fistulous opening was enlarged by a gouge, the cavity of the left frontal sinus scraped, and it was then found that there was pus in the right frontal sinus also, which was evacuated through an opening found in the septum between the two sinuses. A drainage tube was passed through the wound and downward through the nose to keep the canal open. Septic meningitis followed, and he died nine days after operation. At the dressings it was noticed that washing out the sinuses aggravated the symptoms, and it was believed that a direct communication with the interior of the cranium must exist. A conclusion verified at the *post-mortem*, when the cerebral wall of the right frontal sinus was found entirely wanting. Only one other case of deficiency of the cerebral wall is on record, *viz.*, one by Zuckerkandl. In the present case the deficiency was apparently due to inflammatory absorption, and meningeal infection was a necessary consequence. The author regrets that he did not open up each frontal sinus as then he would have been aware of the true condition of the right sinus and would not have used irrigation, which was apparently the direct cause of death, by setting up increased tension with rapid spread of the infecting pus.

Toluidin Blue in Corneal Abrasions and Ulcers.—Dr. Veasey (*Philadelphia Medical Journal*) uses this drug in an aqueous solution of one per mille strength. He first washes out the conjunctival sac with a normal saline or boric acid solution and then floods

it with the toluidin blue. The stain seems to materially hasten the healing of indolent corneal ulcers and causes a marked diminution in the discharge in conjunctivitis, especially in the acute contagious and pneumococcal varieties in which the discharge is so abundant. It is also useful in purulent dacryo-cystitis unless necrosis is present. The discolouration of the surrounding skin and of the surgeon's fingers is readily wiped away with a moist pledget of absorbent cotton-wool. The solution stains corneal abrasions and rolls of mucus blue and so at once indicates their presence and position. The blue stain gives a greater contrast and is more readily observed than the light green stain of fluorescein.—(*Medical Chronicle*, Febr. 1899.)

Operations for Secondary Cataract.—Two papers on this subject are reviewed in the March number of the *Ophthalmic Review*, one by Mr. H. Power in the St. Bartholomew's Hospital Reports, and the other by Dr. Knapp in the Transactions of the American Ophthalmological Society. The different feeling with which different surgeons regard such operations is referred to. Gayet, for example, was stated to dread no operation more, while Knapp divides the membrane in 74 per cent. of his cataract cases without the loss of a single eye. Some operate within a fortnight, others wait longer and Power waits, as a general rule, two to four months and does not consider a year too long to wait. In gouty persons the eye will often not bear two operations soon after one another. In healthy eyes absorption to a considerable extent may be expected to take place; and lastly, at too early a period, "division of the lens and posterior capsule has little more effect in obtaining a clear pupil than the division of so much paste or boiled tapioca would have, since there is little or no elasticity in the softened lens substance, whilst portions of this material are likely to be pressed into the vitreous, in which case the absorption is very slow." As Jessop states in his hand-book recently published, there are two forms of after-cataract, one of which is simple and non-inflammatory, consisting entirely or almost entirely of the remains of the capsule of the lens; the other is inflammatory and is formed by the exuded material from an iritis, united with thickened lens capsule and blood-clot. Obviously, the treatment of and the prognosis regarding the one cannot be the same as in the other case. In the first, the resistance is so extremely slight that there is really no danger in dividing it with such an instrument as the (so-called) Knapp's knife; provided one's instrument is clean and the patient in good health, there is no possibility of dragging on the ciliary processes. But an operation on a case of the second variety should not be too lightly undertaken; and, probably, the best instrument, with which to perform it is either a small Graefe's knife or, if the tissue is too tough for that, iridotomy scissors. In such a case there is very real danger from dragging on the ciliary attachment of the membrane. It is apt to be followed by severe hæmorrhage, or by persistent irido-cyclitis. In the case of the first variety, there is no need to wait after the eye has lost the slight redness which always follows the cataract operation; indeed, some hold that the earlier the second procedure follows upon the first the safer it is, and operate by preference about a fortnight after the extraction, if the eye is quiet by that time, as indeed it usually is. In the second variety, on the other hand, the longer one postpones it the better; the only exception to this is when the tension of the eye is either too high or (perhaps) too low.

Knapp lays down a rule which certainly it is safe to follow—"Do not tear, cut. Parts that cannot be cut are not for needle or knife, but for scissors, in or outside the eye." He does not definitely say, but he appears to operate about six or eight weeks after the extraction, and, in suitable cases, that is, where there is a definite veil in the pupil, is much in favour of the performance of division of the membrane.

Fresh and sterile solutions of extract of supra-renal capsule are necessary if the full effect of the drug is to be obtained. Dr. Kyle of Marion, Ind., takes twenty grains of the saccharated gland and a 2 p. c. solution of phenic acid, mixes and filters through filter paper. This gives a clear brownish red solution which must be kept corked and free from light. Two or three drops in the conjunctiva produce the complete astringent effect. (*Ophthalmic Record*, 1898.)

Protargol for Conjunctivitis.—Darier (Paris) prefers protargol to nitrate of silver in purulent conjunctivitis regarding it as safer, more effective and less irritant. He uses 10 p. c. solutions four times a day, or cauterises with a stronger solution (up to 25 p. c. even) twice a day instilling a 5 p. c. solution between. Pflüger's indifferent results he regards as due to the use of too weak a solution ($\frac{1}{4}$ p. c.). Despagne (Paris) found the applications painless except in one case of trachoma where very great pain was caused. Four cases of vernal catarrh were rapidly cured by it. Fryer (Kansas City) finds a 2 p. c. solution preferable to mercuric salts as an antiseptic before cutting operations on the eyeball. (*American Journal of Medical Sciences*, March, 1899.)

Abscess of the Brain.—Collins of New York publishes (*American Journal of the Medical Sciences*, April 1899) a 'critical summary of recent literature on the treatment of abscess of the brain.' Although all recognise the gravity of cerebral abscess and its inevitable course to death, and although surgical treatment offers to-day a far greater prospect of cure than in any other intra-cranial lesion, still a study of current literature shows that the mortality rate of abscess of the brain has not fallen as it should have. Collins briefly epitomises the cases of operation recorded during the past year, and concludes that the most potent factor in contributing to the frightful mortality recorded is the failure to recognise the existence of abscess of the brain before it has produced either septic complications or profound exhaustion. 'Surgical technic has,' he says, 'apparently very little, if anything, to do with it. The mortality rate of brain abscess will drop just in proportion to the earliness of recognition and the courage of the physician in directing the surgeon to seek for it, even though there be no exact localising symptoms. Abscess of the brain secondary to middle-ear disease is located, in the vast majority of cases, either in the temporal lobe or in the cerebellar hemisphere of the same side. When one is reasonably sure of the existence of brain abscess, no hesitation should be had in exploring first one of these regions, and then if it is not found, the other. Delaying the operation until the appearance of unequivocal localizing symptom . . . by operating on the mastoid after . . . abscess are evident, when one is reasonably assured that the abscess exists, is a far greater injustice to the patient than subjecting him to an exploratory trephining.'

Lavrand. The Choice of Operation in Cancer of the Larynx.—(*Journal des Sciences Médicales de Lille*, July 30, 1898.) **Delavan. The Surgical Treatment of Malignant Disease of the Larynx.** (*Therapeutic Gazette*, Vol. XXII, No. 7.) Presuming the diagnosis of laryngeal cancer to have been established, three methods of procedure are possible should it be decided that operation is justifiable. The surgeon may practise extirpation by endolaryngeal methods; he may perform laryngo-fissure, or he may do a laryngectomy. Lavrand concludes that it is, in early cases, wise to follow the counsel of Semon, who advises thyrotomy, with or without a limited removal of laryngeal tissue. When such judicious intervention is impracticable, as unfortunately is too often the case, the surgeon is confronted with the alternatives *aut Caesar aut nihil*, for he is obliged to decide whether to remove the organ in its entirety or to leave it absolutely alone. And the

former, grave as it must be, is sometimes capable, owing to the improved technique of the operation, of saving the patient's life. It is unwise to reject it systematically, and occasions may arise when, in the interests of the sufferer, this heroic measure may be indicated.

Delavan considers that three groups of operations are offered:—(1) Thyrotomy, with or without partial laryngectomy; (2) complete laryngectomy by the Solis-Cohen method; and (3) complete laryngectomy in cases of extensive laryngeal disease with glandular involvement. Every malignant growth of the larynx of intrinsic origin which can be dealt with, should, without decided indications to the contrary, be treated by operation, and with the least possible delay. The author further believes that it is justifiable to perform an exploratory thyrotomy in a suitable patient, who is suffering from a laryngeal growth of probable malignancy, of intrinsic origin, apparently within reach of free removal, of limited extent, and uncomplicated by glandular enlargement. The author recommends the method of operating pursued by Butlin and Semon. In the case operated on by Solis-Cohen the severed ends of the trachea were brought to the external edges of the cervical incision and there retained, thus cutting off communication between the pharynx and the lungs. The advantages of this procedure are—(1) That the danger from inspiration-pneumonia is lessened; (2) that swallowing and even phonation are satisfactorily accomplished; and (3) that the procuring of an artificial larynx, therefore, becomes a work of supererogation.—(*Medical Chronicle*, February 1899.)

F. P. MAYNARD, M.B., D.P.H.

PATHOLOGY AND BACTERIOLOGY.

The Action of Cobra Poison on the Blood.—

A Contribution to the Study of Passive Immunity. By J. W. W. Stephens and W. Myers (*Journal of Pathology and Bacteriology*, Vol. V, No. III, October 1897). The authors first discuss briefly the theories on the nature of the reaction between toxins and antitoxins, and incline rather to that of Ehrlich, that this is of a chemical nature and independent of the action of living cells rather than that of Roux and Metchnikoff, who hold that an antitoxine can only neutralise a toxin in the presence of living cells. In order to test the question in the case of cobra poison and its antitoxic serum they start with the facts pointed out by D. D. Cunningham, that cobra poison has the power of causing active hemolysis of blood and also of preventing its clotting for a very long time.

With regard to the hæmolytic action of the poison, they first dilute the cobra poison with salt solution of such a strength as will have no power of dissolving out the hæmoglobin from the red corpuscles even after many hours, and add this to blood under the hæmocytometer and count the corpuscles at different intervals of time. In this way a quantitative estimation of the action of different strengths of the poison in dissolving the hæmoglobin out of the corpuscles is obtained, and by now repeating the experiments with the addition of certain quantities of the antitoxic serum, they were able to show that the hæmolytic action of the poison may be entirely neutralised by a certain dose of the antitoxine. A mixture of the two bodies in this proportion in certain doses was found to be harmless when injected into a guinea-pig, although the dose of the cobra poison alone was sufficient to certainly kill the animal. If only sufficient antitoxin was added to as to partly neutralise the hæmolytic action of the poison, then that mixture gave uncertain results when injected into the animals, although the mixture contained a fatal dose of the toxin. However, when larger doses of the same mixture, which was harmless in small ones, was used, then a fatal result ensued, pointing to the presence of more than one poison in the cobra venom, only one of

which is neutralised by the antitoxic serum, just as (Waddell* and) Cunningham has shown to be the case with the poison of Russel's viper, and Martin has found in some of the Australian snakes. Other antitoxins, such as those of tetanus, diphtheria, typhoid and antistreptococcus, were used instead of the cobra antitoxic serum with negative results, showing that the reaction between the cobra poison and its antitoxins is a specific one.

They then tested in the same way the action of the antitoxin in restraining the power of cobra poison in preventing the clotting of blood, and obtained similar results, and hence conclude that the neutralisation of the toxin of cobra poison by its antitoxin in vitro is certainly not vital or cellular, but must be chemical.

Note on the presence of Iron in the Liver and Spleen in two cases of Malaria.

—By J. E. Dutton (*Journal of Pathology and Bacteriology*, Vol. V, No. III). The organs examined were from the pathological museum of the Liverpool Royal Infirmary, the patients having come from West Africa and Madeira. Histo-chemical reactions followed by a microscopical examination as well as a quantitative analysis were carried out. The reactions used were (1) potassium ferrocyanide and hydrochloric acid; (2) that of Maculium, who found that a watery solution of hæmatoxylin gives a dark-blue or purple colour with iron granules. The above reactions after first using a weak three per cent. solution of nitric acid in absolute alcohol was also used. By means of the two first methods the brown pigment in the endothelial cells of the capillaries remains unchanged, while the iron granules in the liver cells become blue and purple respectively; but, if the sections are first treated with the acid alcohol, the brown pigment also takes on the above-mentioned colouring. By these methods an abundance of iron was demonstrated in the liver and spleen of both cases, but much more marked in case 2 than in case 1. The analysis gave results in accordance with the intensity of the reactions, viz., about twice as much iron in case 2 as in case 1. These results are very similar to those which I obtained in a similar examination of *Kala Azar* cases, the analyses of which were kindly made for me by Major Waddell, I. M. S. A good plate illustrating the reactions, and an interesting historical account of the subject, are appended to the paper.

Formalin as a Preservative of Cultivations of Bacteria.

—By W. C. Pakes and J. W. Eyre (*Journal of Pathology and Bacteriology*, Vol. IV, No. III). The authors carried out a series of experiments to determine if typical cultures of various organisms on solid media could be permanently preserved by exposing them to the action of the vapour of formalin. After the cotton-wool plug had been removed, the test tubes, etc., were placed in a tall glass jar covered with a glass plate in the bottom of which was put some cotton-wool soaked in formalin. Non spore-bearing organisms are rendered quite sterile in forty-eight hours, and spore-bearing ones in ninety hours, and the cultures can afterwards be exposed to the air up to three months without becoming contaminated by moulds. Moreover, the staining properties of the organisms are not altered by this treatment, or by placing cover glass preparations in undiluted formalin for twenty minutes, so that both these as well as typical cultures treated by this chemical can be used in classes without the danger attending the use of virulent living organisms. (Culture tubes can be fixed more simply by placing a few drops of formalin on the cotton-wool plug and then applying a rubber cap over it.)

Conservation des pieces Anatomique par Formal.—*Archives de Parasitologie*. (Vol. I, No. 4, October 1898). The methods of preserving specimens used by Professor Kanthack at Cambridge, and originally

published in the *Saint Bartholomew's Hospital Journal*, December 1897, are given in this paper. The most satisfactory is the following:—(1) The specimen must be fixed for twenty-four hours or more, according to its size and consistency in the following solution: Formalin, 200 c. c., Water, 1000 c. c., Acetate of Potassium, 30 gr., Nitrate of Potassium, 15 gr. (2) It is then placed in alcohol of from 80 to 100 per cent. until the colour returns, which takes from two to sixteen hours, and has to be watched. (3) It is placed in the following solution of glycerine in which it is mounted:—

Water ...	2 litres.
Acetate of Potassium 200 gr.	
Glycerine ...	400 gr.

The solution of formalin can be used twice, and then again for the first portion of the time required for fixing two more specimens. If the specimen is a large one, the vessels should be injected with a solution of formalin of twice the strength of that given above. If the solution of glycerine is not clear it should be filtered before use.

Paludisme et Moustiques.—By A. Laveran, Janus (*Archives Internationales pour l'histoire de la Medicine et la Geographie Medicale*, Mars-Avril and Avril-Mai). This article gives in the first part the general arguments in favour of the mosquito theory of malaria, and in the second part an account of Major Ross' researches and their confirmation by other observers. He gives instances of places in being free from malaria from which mosquitos were also absent; of malaria and mosquitos both ceasing at the same height above the sea; the reasons of both corresponding; and states that the temperature favourable to malaria is also so to the multiplication of mosquitos, etc. He suggests that instances of disturbance of the soil and of malaria having arisen from soil being brought from a malarious locality, are due to its containing the larvæ or eggs of mosquitos, and that the greater resistance of negroes is due to the thickness of their skins. He also puts forward the view that the "black spores" of Ross, which he states vary greatly in size, may be due to the degeneration of the "germinal threads," and lays stress on the importance of further study of the former bodies. He refers to Koch's suggestion that mosquitos, which have sucked malaria blood, do not give malaria directly, but by infecting the next generation of mosquitos, as in the case of tick fever, but points out that Bignami failed to produce fever by the bites of insects brought from marshes in the larval state, although adult ones produced malaria in one instance. He thinks that, although it is proved that malarial fever may be produced through the bites of mosquitos, that, nevertheless, there are a number of facts which cannot be explained by the view that this is the only or common way in which the disease is caused. For example, the injurious effects of disturbance of the soil in malarious places. He thinks it probable that the soil contains a number of resistant malarial germs, which, when they gain access to the air, give a rise to malaria, while water may also serve as a vehicle for the organisms to gain entrance into the body.

De l'Action du Formol sur les Globules Rouges du Sang.

—By Dr. G. Marciano (*Archives de Medicine Experimentale*). A solution of ten parts of formol in hundred of absolute alcohol will fix the red corpuscles of the blood in ten minutes, after which the specimen should be washed well and stained in eosine. By mixing a drop of blood in a closed pipette with one part each of formol and sodium chloride in from 85 to 100 parts of water, the blood corpuscles can be preserved almost indefinitely, and either counted or stained and examined at the end of that time. Malaria-blood might in this way be preserved for later examination or be sent to a laboratory for that purpose.

L. ROGERS, M.D., F.R.C.S.

* [*Are Venomous Snale Autotoxic*: Calcutta, 1889—Ed.]

Correspondence.

THE EXTIRPATION OF MALARIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I have read with much interest Major Ronald Ross' lecture on *The Extirpation of Malaria*. There are one or two questions I would like to ask him concerning matters not fully explained in his lecture:—

- (1) By what method does the *Plasmodium malariae* pass from the mosquito into the blood of man?
- (2) Does he deny that there are any ways in which the poison of malaria can be conveyed to man, other than by mosquito bites?
- (3) How does the mosquito theory fall in with the belief in freedom from malaria at high altitudes?

Yours faithfully,

J. H. TULL-WALSH,
Major, I. M. S.

BERHAMPTON,
Bengal, 30th July 1899.]

Service Notes.

HONORARY SURGEON TO THE QUEEN.

Surgeon-General C. Colvin Smith, M.D., C.B., has been selected for appointment as Honorary Surgeon to the Queen, in the place of the late Surgeon-General W. C. Maclean, C.B. Surgeon-General Colvin Smith belonged to the Indian Medical Staff, and during his long service took part in the Burmese War of 1852-53, in the Indian Mutiny in 1858-59 and the Egyptian Expedition, 1892. For these campaigns he has had several honours bestowed upon him, including three medals (each with clasp), the Khedive's bronze star, C. B., and the third-class Order of Osmanieh.

SUBORDINATE MEDICAL DEPARTMENT.

The Secretary of State has sanctioned the following improvements in the conditions of service for the Indian Subordinate Medical Department, Hospital Assistant Branch, in order to render the branch more popular and obtain a better class of recruits:—(1) Abolition of Sub-Hospital Assistant which will make the commencing pay of a Military Medical Subordinate Rs. 20 monthly, plus five for the English qualification; (2) subdivision of grade of Senior Hospital Assistant into two classes; first, with relative rank of Subadar with a salary of Rs. 100; and second, carrying the relative rank of Jemadar with a salary of Rs. 80, to include Rs. 30 and Rs. 25, respectively, admissible to men possessing the English qualification; (3) creation of a native warrant rank for the 1st, 2nd and 3rd grades of Hospital Assistants; also an improvement in barracks.

DINNER OF R.A.M.C.

THE Annual Dinner of the Royal Army Medical Corps took place on Monday, June 12th, at the Whitehall Rooms, London. The Chair was occupied by the Director-General, who, after the toast of "The Queen" had been honoured, gave that of "The Corps." In the course of his remarks, he congratulated the officers present on the altered circumstances under which they met this year. The formation of the Royal Army Medical Corps, announced by Lord Lansdowne at the historic dinner at the Mansion House, had brought about a change, which had already proved to be beneficial and which would, he felt no doubt, bring still greater benefits to the service in the future. Surgeon-General O'Dwyer then proposed "The Health of the Director-General," and spoke of the regard and esteem felt for him by every officer of the corps. The Director-General, in the course of a brief reply, said that when he first took up the duties of his office, he had called to pay his respects to the Adjutant-General, and that after a cordial interview that distinguished officer had said to him as he was taking leave, "There is one piece of advice I will give you. Whatever happens and whoever opposes you, always stick up for your department." He had endeavoured to follow that advice in the past, and proposed to continue to follow it in the future. The conclusion of the speech was warmly applauded.

The formal proceedings, which were none the less agreeable because short, then came to an end. The arrangements for the dinner, which were most successful, were carried out by Lieutenant-Colonel J. Hector, M.B., A.M.S., honorary secretary, to whom we are indebted for the following list of those present at the dinner:

Surgeon-Generals.—J. Jameson, C. B. (Director-General); A. F. Bradshaw, C. B.; C. McDuff, C. B.; A. A. Gore, C. B.; R. Harvey, C. B., D.S.O.; H. S. Muir, W. Nash, T. F. O'Dwyer, A. F. Preston, J. B. C. Read, C. B.; P. B. Smith, W. D. Wilson.
Colonels.—W. F. Burnett, J. A. Clary, O. Codrington, H. Comerford, W. G. Don, A. W. Duke, T. J. Galloway, C. B.; C. A.

Innes, T. Ligertwood, W. H. McNamara, C.B.; W. T. Martin, J. Matuini, J. L. Notter, T. O'Farrell, W. F. Stevenson.
Lieutenant-Colonels.—W. H. Allen, W. B. Allin, J. F. Beattie, J. D. Bourke, U. J. Bourke, A. L. Browne, W. L. Chester, A. F. S. Clarke, W. Donovan, J. D. Edge, R. Exham, J. A. Gormley, W. L. Gubbins, J. Hector, R. D. Hodgson, J. P. Hunt, W. Johnston, W. Keir, W. W. Kenny, H. C. Kirkpatrick, B. W. S. Large, H. A. Mackinnon, D.S.O.; W. A. May, W. Rainsford, W. F. Ruttledge, M. Ryan, P. B. Tuthill, O. G. Wood, T. W. Wright.
Majors.—W. Babbie, C. W. G., M. W. Baker, W. G. A. Bedford, M. O. D. Braddell, C. H. Burtchall, A. M. Davies, J. D. Day, A. Dodd, S. F. Froyer, H. Grier, F. A. Harris, E. M. Hassard, H. Hathaway, J. Hickman, S. Hickson, G. Hildard, C. M. G.; H. E. F. J. J. Julian, R. E. Kelly, A. Keogh, J. D. Moir, A. H. Morgan, W. G. Morgan, E. North, D. M. O'Callaghan, T. J. O'Donnell, E. V. A. Phipps, W. Pope, M. W. Russell, A. A. Sutton, G. T. H. Thomas, F. H. Troherne, G. T. Trewhan, S. Westcott, E. M. Wilson, C. M. G., D. S. O.

Captains.—K. B. Barnett, T. B. Beach, H. J. M. Buist, H. E. Dowse, H. G. Faichnie, M. L. Hughes, J. C. Jameson, S. G. Moores, E. M. Pilcher, C. W. Profeit, P. H. Whiston, L. Way, E. McK. Williams.
Guests.—Mr. Vesey Holt, Dr. Dawson Williams, Mr. T. Wakley, jun.

The Director-General of the Medical Department of the Royal Navy and the President of the Indian Medical Board were also invited, but were unable to be present.

I. M. S. DINNER.

THE dinner of the Indian Medical Service was held at the Hotel Cecil, on June 8th. In proposing the customary loyal toasts, the Chairman, Surgeon-General Sir W. Guyer Hunter, K.C.M.G., drew attention to the interest shown by the Prince of Wales in medical work, particularly instancing the deep sympathy he has shown in the movement for the prevention of tuberculosis. Dr. W. S. Playfair took the opportunity, whilst proposing the toast of the "Navy and Army," to refer to the great change for the better which recent regulations had made in the Army Medical Service, and stated that the most important thing was that in consequence of these beneficial alterations the Service was already attracting an adequate number of suitable candidates. Sir Henry F. Norbury, K.C.B., Director-General, Royal Navy Medical Department, in responding, said that the Navy Medical Officers might be called a contented body, humorously adding that absolute perfection was a mistake, because it prevented people from grumbling, and took away a great deal of the pleasure of life. The Director-General of the Army Medical Service (Surgeon-General Jameson, C.B.), in responding for the army, sketched the different condition of the sick and wounded in wars of the present day as compared with the Crimea. He thought the Sirdar had summed up the results of the work of the Medical Service very happily in the expression: "A minimum of suffering and a maximum of comfort." Surgeon-General Sir Joseph Fayer proposed "The Health of the Guests" in his most happy manner; and Mr. Thomas Bryant, in responding, said that the civilians present appreciated very highly the opportunity of meeting a body of men of whom the profession was always particularly proud. To Mr. Edmund Owen was entrusted the duty of proposing the toast of "The Indian Medical Service," and he conveyed in a capital speech his views on the advisability of raising the age at which men should enter the service. Though he admitted that knowledge was the monopoly of the young practitioner of twenty-one, he nevertheless forcibly showed the benefits that would accrue if the Service Examination were altered, so that it would attract the men who had been house-surgeons, and had had actual experience. In response to loud and repeated calls, the Director-General of the Indian Medical Service (Surgeon-General R. Harvey) spoke of the improvement which was being made in the Chemical Department, and referred to the proposed Alienist Department for India. There was a project, also, he said, for a Bacteriological Department, which would, he hoped, bring India up to date in the matter of modern medical research. Though the speeches lasted till a very late hour, Lieutenant-Colonel Freyer was somewhat vociferously compelled to make a few remarks—an opportunity he turned to some account by a neatly-worded reference to the fact that no recognition had ever been known in the history of the service to have been accorded for sound practical professional work. The following also were present:

Surgeon-Generals.—A. C. C. De Renzy, C.B., W. R. Rice, C.S.I., P. W. Sutherland.

Colonels.—A. M. Branfoot, W. E. Cates, H. Cayley, C. P. Costello, D. E. Hughes, J. C. Penny, A. Porter, W. H. Roberts, B. Williamson, W. A. S. Wynne.

Lieutenant-Colonels.—H. Armstrong, Oswald Baker, W. H. Cadge, J. W. Clarkson, A. Crombie, A. H. C. Dane, E. F. Drake-Brockman, Theodore Duke, G. A. Emerson, J. C. Fullerton, G. Grant, D. F. Keegan, J. B. Lyon, C.I.E., J. Maitland, G. Massey, H. K. McKay, J. Parker, J. Reid, W. H. Riddell,

J. B. Scriven, J. G. Skardon, G. S. Sutherland, W. H. Thornhill, A. H. Williamson.

Majors.—W. S. Caldwell, F. Carter, G. W. P. Dennys, A. S. Faulkner, J. Gilbert, S. Hassan, P. Hahir, H. Herbert, R. T. Lyons, P. D. Pank, F. Peck, F. C. Reeves, J. Scott, H. N. Stevenson, J. F. Tuohy, D. Warlick.

Captains.—J. I. Calvert, R. H. Castor, H. E. Drake-Brockman, G. Ramsey, R. F. Standage, R. G. Turner, C. J. R. Whitecombe.

Lieutenant.—J. N. Smith.

Guests.—Dr. H. W. G. Macleod, Mr. Arthur Low, and Mr. Wakley.

CIVIL MEDICAL CHARGES.

WE understand, says the *Bombay Gazette*, that a despatch has reached the Government of India from the Secretary of State on the subject of the great increase which has taken place, of recent years, in the establishment of the Indian Medical Service due to the enhanced number of civil charges at present held by members of this department, more than three-fifths of the whole establishment being employed on civil duty. A proposal is under consideration in this connection to further extend the system of filling Civil Medical charges by Uncovenanted Medical Officers and Senior members of the Subordinate Medical Department, which already obtains in a certain number of cases, the object being to reduce the present Indian Medical Service establishment, or at any rate, to restrict its further increase.

ARMY MEDICAL CORPS FOR INDIAN HOSPITALS.

A SCHEME for the introduction of the rank-and-file of the Royal Army Medical Corps into military hospitals in India is occupying the attention of the Government of India. The present system of nursing serious cases of illness by partially or totally untrained regimental orderlies is considered disgraceful by the London medical journals, who have recently been much exercised on the subject.

THE R. A. M. Corps are to have a change in uniform, their facings being changed from black to pale blue.

TWENTY-THREE officers will be admitted to the Indian Medical Service this month.

Obituary.

ROBERT MOIR, M.D., F.R.C.S. EDIN.

SURGEON-MAJOR, I.M.S.

(Retired).

THIS able and highly-esteemed officer of the Indian Medical Service died at St. Andrews, N.B., on June 7th, 1899, aged 68 years. The following particulars of his career are given in a home contemporary. He was the eldest son of Dr. David Macbeth Moir, of Musselburgh, the well-known "Delta" of *Blackwood's Magazine*, author of the novel *Mansie Waugh*, a history of ancient medicine and other works, and a poet of great refinement and feeling. Robert Moir was educated at the Musselburgh Grammar School and Edinburgh Academy, and studied medicine in the University of Edinburgh, and subsequently in Paris. He obtained the License of the Royal College of Surgeons, Edinburgh, in 1851, and was admitted to the Fellowship in 1859. He took the degree of M.D. of the Edinburgh University in 1852, the subject of his thesis being Injuries and Diseases of the Vertebrae. He held the office of Resident Physician and Surgeon in the Edinburgh Infirmary, and was appointed to the service of the Honourable East India Company by the Marquis of Dalhousie, who was a friend of his father's, in 1853 in which year he arrived in India.

He served at Dibrugarh in Assam in charge of a Goorka regiment and the civil station until he was sent home on sick furlough in 1858. He was in Assam during the Mutiny. Returning to India in 1860 he was appointed to the civil charge of Haupper in the North-Western Provinces, and subsequently served as Civil Surgeon of Naini Tal and Benares, and Superintendent of the Central Gaol at Agra. Thence he proceeded to Simla, where he obtained the important charge of Joint Civil Surgeon, a coveted appointment then tenable for a period of two years, at the close of which he was posted

to the Civil Surgeoncy of the 24-Pergunnahs, Bengal, with the added appointment of Medical Inspector of Emigrants. While holding this charge he was deputed to inquire into the causes of excessive mortality in the gaols of Behar, and officiated for a time as Professor of Midwifery in the Calcutta Medical College. He proceeded on furlough in 1875, and while at home was offered by Sir Richard Temple, then Lieutenant-Governor of Bengal, the appointment of Principal of the Calcutta Medical College and Professor of Medicine. This is one of the prizes of the Bengal Medical Service, and would have been a worthy climax of a most meritorious career; but circumstances occurred which induced him to retire from the service with the rank of Surgeon-Major in June, 1877, and during the remaining twenty-two years of his life he practised in St. Andrews in partnership with his brother, Dr. John Wilson Moir. In this capacity he earned by his great attention and skill a high reputation as a physician and surgeon, and by his amiable disposition, kindly manner, and sympathetic services, he endeared himself to the community of the ancient Scottish burgh. His popularity and the great esteem and regard in which he was held were attested by the numbers who attended his funeral, and the visible signs of regret which were manifested on that occasion. Upwards of one hundred beautiful wreaths were placed on his grave.

Robert Moir was a strikingly handsome man. He was gifted with good abilities, which had been developed by an excellent education. He was a man of modest and diffident disposition, and though everything he wrote and did bore the stamp of culture and sense, he was not given to writing or publishing, and limited his intellectual and professional output to the work which it was his duty to perform. To this he devoted himself with diligence and success. His strength and charm arose mainly from his sterling personal character, his kindness, truthfulness, fidelity, manliness, and courtesy. He was one of those men whom it was not easy to know well, but whom to know well was to esteem and like greatly; and with longer and more intimate acquaintance, esteem and liking increased. He was kind to the poor. He took an immense interest in the St. Andrews Cottage Hospital, and was instrumental in augmenting its scope and efficiency. Robert Moir's memory will long remain treasured in the recollection of those who knew and worked with him in India, and of numerous patients and friends (for the terms were mostly synonymous in his case) at home who derived benefit and pleasure from his ministrations.

He leaves a widow and family of three sons and three daughters. His youngest son is an officer in the Indian Staff Corps, and his eldest son, David Macbeth Moir, M.B., is a Captain in the Indian Medical Service, and for a few months last year edited this journal.

Gazette Notifications.

GOVERNMENT OF INDIA.

MILITARY.

J. W. BARKOW, R.A.M.C., to officiate on the Staff of the Army, with the temporary rank of W. J. CHURTON, R.A.M.C., transferred to the Staff 24th June 1899.

The services of Colonel WEIR, I.M.S., are placed at the disposal of the Government of India in the Home Department for employment as Principal Medical Officer, Bombay and Aden districts.

The services of Lieutenant E. F. G. TUCKER, I.M.S., are placed temporarily at the disposal of the Government of Bombay for employment on plague duty.

The services of the undermentioned officers are replaced at the disposal of the Military Department, with effect from the dates on which they made over charge of their duties under the Government of Madras:—

Captain S. A. PEARSE, 17th Madras Infantry, Lieutenant H. P. AINSLIE, 3rd Madras Infantry.

Captain V. G. DRAKE-BROCKMAN, I.M.S. (Bengal), Medical Officer of Bengal Infantry, is appointed to the 2nd class and as Agency Surgeon at Putana, with effect from the 1st April 1899.

Captain H. BURDEFF, I.M.S. (Bengal), Assistant Agency Surgeon in Gilgit, is granted privilege leave for three months, with effect from the 14th June 1899.

The services of Colonel G. W. R. HAY, M.D. I.M.S. (Bombay), are placed temporarily at the disposal of the Government of Bombay.

The following promotions are made subject to Her Majesty's approval:—

BENGAL ESTABLISHMENT.

Lieutenant-Colonel to be Colonel.

Dated 19th May 1899.

ADAM SCOTT REID, M.B., vice Colonel A. STEPHEN, M.B., retired.

CIVIL.

The services of Captain A. E. ROBERTS, M.B. I.M.S. (Bengal), are placed temporarily at the disposal of the Government of the Punjab for employment on plague duty, with effect from the 12th May 1899.

The services of Lieutenant W. G. LISTON, M.B., I.M.S., are replaced at the disposal of the Military Department.

The services of Captain E. J. MORGAN, M.B., B.S., I.M.S. (Bengal), are placed temporarily at the disposal of the Government of the North-Western Provinces and Oudh.

Colonel A. SCOTT REID, M.B., I.M.S. (Bengal), is appointed to be Administrative Medical Officer and Sanitary Commissioner of the Central Provinces, with effect from the 19th May 1899.

BENGAL.

Lieutenant-Colonel W. H. GREGG, I.M.S., has been granted an extension of fur for a medical certificate.

Dr. G. " " Medical Officer of Purnea, is appointed Bakerganj.

Major H. " " is appointed to act as Civil Surgeon of Purnea.

MACRAE, I.M.S., Civil Surgeon of Dacca, is for two months and twenty-nine days, with 1899.

" " I.M.S., is appointed to act as Civil Surgeon of Dacca.

The services of Major H. E. DEANE, R.A.M.C., are placed temporarily at the disposal of the Chairman of the Corporation of Calcutta.

Captain E. A. R. NEWMAN, A.M.S., is appointed, with effect from the 2nd April 1899, to act as Second Resident Surgeon, Presidency General Hospital, during the absence, on deputation, of Captain F. O'Kinealy, I.M.S., or until further orders.

Captain W. W. CLEMPISHA, I.M.S., is appointed to act as Deputy Sanitary Commissioner, Metropolitan and Eastern Bengal Circle, during the absence, on deputation, of Captain R. H. MADDOX, I.M.S., or until further orders.

Captain B. R. CHATTERTON, I.M.S., Medical Officer in charge of the 7th Bengal Infantry, stationed at Dorunda, acted as Civil Surgeon of Ranchi in addition to his own duties from the 15th March to the 13th June 1899.

MEDICAL DEPARTMENT.

Dr. V. L. WATTS, Officiating Civil Medical Officer of Bogra, is allowed privilege leave for three months.

Captain F. O'KINEALY, I.M.S., Officiating First Resident Surgeon, Presidency General Hospital, is allowed leave for two months and six days, with effect from the 28th July 1899.

The Lieutenant-Governor directs that the Dispensary at Bankijal, in the district of Puri, shall be under the control and administration of the District Board of Puri.

A. RIGBY, Civil Medical Officer of Manbhum, is allowed privilege leave for three months. Dr. J. L. HENDLEY, Civil Medical Officer, Puri, to act as Civil Medical Officer of Manbhum.

Assistant-Surgeon HARI MOHAN SEN is appointed temporarily to have medical charge of the district of Puri.

Dr. PRIN, Superintendent, Royal Botanic Gardens, Calcutta, has gone home on three months' privilege leave. Dr. GAGE, Curator of the Herbarium, will carry on Dr. PRIN's duties.

BOMBAY.

Lieutenant-Colonel C. MONKS, I.M.S., to be Civil Surgeon, Belgaum, vice Lieutenant-Colonel C. T. Peters, M.B., I.M.S., but to continue to act as Port Surgeon, Aden.

Major C. F. WILLIS, M.D. I.M.S., to act as Civil Surgeon, Belgaum, and to hold charge of the office of Deputy Sanitary Commissioner for the Southern Registration District in addition.

Major C. J. SARRIS, M.B., M.Ch., I.M.S., to act as Civil Surgeon, Ahmednagar, in addition to his military duties.

Major W. A. CORKERY, I.M.S., to be Civil Surgeon, Karwar, but to continue to act as Civil Surgeon, Dhawar.

Captain ASHTON STREET, M.B., F.R.C.S., I.M.S., to be Civil Surgeon, Sukkur, but to continue to act as Civil Surgeon, Hyderabad.

Major M. A. T. COLLIE, M.B. (Aber.), C.M., I.M.S., to be Civil Surgeon, Nasik, vice Lieutenant-Colonel C. G. W. LOWDELL, I.M.S., but to continue to act as First Physician, Jamshedji Jijibhai Hospital.

Captain S. E. PRALL, M.B., B.S., I.M.S., to be Civil Surgeon, Panch Mahals, but to continue to act as Second Physician, Jamshedji Jijibhai Hospital.

Major B. B. GRAYFOOT, I.M.S., to be Civil Surgeon, Satara, but to continue to act as Medical Storekeeper, Bombay Command.

BOYD, F.R.C.S. (Ir.), I.M.S., Physician, is allowed leave on urgent private affairs.

Major H. HERRBERT, F.R.C.S., I.M.S., has been allowed by Her Majesty's Secretary of State for India an extension of leave on medical certificate for three months.

Lieutenant-Colonel O. H. CHANNER, M.B., C.M., I.M.S., Deputy Sanitary Commissioner, is appointed to be Civil Surgeon for India an extension of leave.

Major R. W. S. LYONS, M.D., I.M.S., has been allowed by Her Majesty's Secretary of State for India to return to duty within the period of his leave.

Captain S. E. PRALL, M.B., B.S., I.M.S., acting Second Physician, Jamshedji Jijibhai Hospital, is allowed privilege leave of absence for three months from the 12th August 1899.

BURMA.

Major A. R. P. RUSSELL, I.M.S., on transfer, made over, and Lieutenant-Colonel S. H. DANTRA, I.M.S., on return from leave assumed charge of the Civil Surgery of the Mandalay district on the 7th June 1899.

Captain T. STODART, I.M.S., made over, and Major A. R. P. RUSSELL, I.M.S., assumed, charge of the Civil Surgery of the Myingyan district on the 10th June 1899.

PANJAB.

Captain E. R. PARRY, I.M.S., Officiating Civil Surgeon, Ferozepore, has obtained privilege leave of absence for 60 days, with effect from the afternoon of the 13th June 1899.

Notification No. 127, dated the 29th March 1899, granting Major R. J. MAGNAMARA, I.M.S., Superintendent, Central Jail, Mong Haul, furlough to Europe for 18 months, is hereby cancelled.

Major H. M. MORRIS, I.M.S., Civil Surgeon, Karnal, has obtained furlough on medical certificate for six months, with effect from the 8th May 1899, or such subsequent date as he availed himself of it.

ASSAM.

The services of Captain H. S. WOOD, M.B., C.M., I.M.S. (Bengal), are placed temporarily at the disposal of the Chief Commissioner of Assam.

Lieutenant A. A. F. MCARDLE, I.M.S., Medical Officer, 44th Gurkha Rifles, is, with the consent of the Military authorities, appointed to hold civil medical charge of the Naga Hills district, in addition to his Military duties, with effect from the afternoon of the 6th May 1899.

CENTRAL PROVINCES.

The services of Captain W. H. GRAY, I.M.S., Superintendent of the Central Jail, Raipur, are placed at the disposal of the Government of India in the Home Department, with effect from the date on which he may be relieved of his duties at Raipur.

Captain W. HENVEY, I.M.S., is appointed to be Superintendent of the Central Jail, Raipur.

N.-W. PROVINCES AND OUDH.

Captain J. S. S. LUMSDEN, I.M.S., Civil Surgeon, Basti, privilege leave for three months, with effect from the 15th July 1899.

Lieutenant-Colonel J. ANDERSON, I.M.S., Civil Surgeon, Agra, privilege leave for three months, with effect from the 13th July 1899, or subsequent date.

Major R. E. MOLESWORTH, R.A.M.C., to the civil medical charge of Almora, in addition to his own duties, with effect from the 10th June 1899.

Military Assistant-Surgeon G. T. GARROLL, on return from leave, to the medical charge of the Basti district, during the absence on leave of Captain J. S. S. LUMSDEN, I.M.S., or until further orders.

Captain E. JENNINGS, I.M.S., Officiating Superintendent, Central Prison, Bareilly, to be confirmed in that appointment, with effect from the date of retirement of Lieutenant-Colonel R. A. K. HOLMES, I.M.S.

Captain R. C. MACWATT, I.M.S., on return from plague duty, to officiate as Superintendent, Central Prison, Farukhabad, during the absence on leave of Major R. R. WEIN, I.M.S., or until further orders.

In supersession of previous Notification, dated 10th May 1899, Captain W. SELBY, I.M.S., whose services have been temporarily placed at the disposal of this Government, to plague duty at Rasra in the Benares Division.

In supersession of previous Notification, dated 10th May 1899, Captain T. W. FULLERTON, I.M.S., on plague duty at Rasra in the Benares Division, to officiate as Deputy Sanitary Commissioner, 1st Circle.

Captain E. J. MORGAN, I.M.S., whose services have been placed temporarily at the disposal of this Government, to officiate as Civil Surgeon, 2nd class, and to be posted to the Mainpuri district.

Major L. J. PISANI, I.M.S., Civil Surgeon, on return from leave, to the Agra district, during the absence on leave of Lieutenant-Colonel J. ANDERSON, I.M.S., or until further orders.

Colonel G. C. HALL, I.M.S., F.R.C.S., Officiating Inspector-General of Civil Hospitals, North-Western Provinces and Oudh, on being relieved of that office by Colonel G. HUTCHESON, I.M.S., to revert to his substantive appointment as Inspector-General of Prisons, North-Western Provinces and Oudh.

Major C. MACTAGGART, I.M.S., Officiating Inspector-General of Prisons, North-Western Provinces and Oudh, on being relieved of that office by Colonel G. C. HALL, I.M.S., F.R.C.S., to revert to his substantive appointment as Superintendent, Central Prison, Allahabad.

Captain H. AUSTEN SMITH, I.M.S., Officiating Superintendent, Central Prison, Allahabad, on being relieved by Major C. MACTAGGART, to the medical charge of the Mirzapur district.

Major J. B. WILSON, M.D., R.A.M.C., Shahjahanpur, to the civil medical charge of that district, in addition to his own duties, from the 29th June 1899, vice Major J. MORWOOD, I.M.S.

Major B. J. INNIS, R.A.M.C., to the civil medical charge of Farukhabad, in addition to his own duties, from the 12th June 1899.

Civil Assistant-Surgeon NILMANI CHAUDHARI, attached to the Sadar Dispensary, Bahraich, to the civil medical charge of that district, in addition to his own duties, from the 27th June 1899.

Lieutenant F. J. GAINE, R.A.M.C., to the civil medical charge of his own duties, from the 22nd June 1899.

R.A.M.C., to the civil medical charge of his own duties, from the 26th June 1899.

M.S., to the civil medical charge of Almora, in addition to his own duties in the Military Department from the 23rd June 1899.

Captain W. H. E. WOODWRIGHT, I.M.S., Officiating Civil Surgeon, Bahraich, to officiate as Superintendent, Central Prison, Agra, during the absence on leave of Captain S. H. HENDERSON.

THERAPEUTIC NOTES.

A Local Anæsthetic for Extraction of Teeth.—

R. Menthol	...	...	160 grains.
Tinct. Myrrh	...	...	80 drops.
Alcohol	...	...	2 ounces.

M. Sig.: Thoroughly dry the gums and apply freely for a few minutes. Use more freely for a permanent than a deciduous tooth.—*Pædiatrics*.

For Malaria.—

R. Quinine Sulph.	...	...	1 drachm.
Ol. Eucalypti	...	...	24 drops.
Piperinæ	...	...	12 grains.

M. ft. Capsules No. 12. Sig.: One capsule every three hours.

Therapeutic Points in Practice.—W. Murrell, M.D., F.R.C.P., Westminster Hosp. (*Medical Brief*, Jan., p. 39) calls attention to the value of:—

1. Small doses of tincture of aconite frequently repeated in tonsillitis, and in the initial state of febrile diseases.
2. Painting the chest and back with liquor iodi fortis—diluted if necessary with an equal quantity of the tincture—in all cases attended with cough.
3. Large doses of quinine in supra-orbital neuralgia.
4. Five grains of butyl-chloral-hydrate with one two-hundredth of a grain of gelsemine in neuralgia of the fifth nerve.
5. Small doses of a saturated solution of camphor in alcohol in autumnal or choleraic diarrhœa.
6. Small doses of perchloride of mercury in infantile diarrhœa when the stools are green, slimy, and offensive.
7. Sulphide of calcium in doses of a tenth of a grain in boils, carbuncles, and abscesses.
8. Flying blisters in typhoidal conditions.

NEW REMEDIES AND PREPARATIONS.

'APENTA' APERIENT WATER.

This is recommended as a useful aperient in dysentery. As was recently noted, the old routine treatment of that disease by opium and ipecacuanha is open to many objections and of doubtful efficacy; whilst good results were obtained by the administration of sulphate of magnesia which acts apparently as an eliminant and so promotes intestinal asepsis. Epsom salts, however, is apt to be unduly irritant, so the Apollinaris Company have brought forward Apenta water as a less irritant substitute for this purpose. It is a natural mineral water which contains the sulphates of magnesia and soda, and is worth trying in dysentery as well as in many of the fevers in this country which are attended with a dysenteric symptoms.

CARBOLIC ACID SOLOIDS.

THE introduction of this preparation by the makers of the famous tabloids, Messrs. Burroughs, Wellcome & Co. has been prompted by a consideration of the constantly increasing use of carbolic acid as an antiseptic, and the great difficulty of carrying the usual bulky solutions of this chemical. 'Soloid' Carbolic Acid, gr. 60, enables the practitioner to carry either in his hand-bag or in his pocket a convenient quantity of ready weighed and quickly soluble antiseptic for the preparation of solutions of any desired strength at the moment, and in the place where they are required to be used.

A harmless artificial colouring agent has been added to 'Soloid' Carbolic Acid, and this colour distinguishes it from compressed drugs intended for internal use. The colouring is communicated to the water in which solution is effected, thus rendering it unlike any other liquid in customary use at the operating table or in the sick room. A distinctive shape provides an additional safeguard. The preparation is issued in tubes containing six in each.

One of the soloid dissolved in three-quarters of a pint of water yields approximately a one per cent. solution. One dissolved in three pints of water yields a solution suitable for use as a mild disinfectant, or as an antiseptic spray for the mucous membranes of the mouth, pharynx, larynx and nose.

These soloids are especially serviceable for use in this country, where so much travelling has to be done and where the transport of fluids is a serious difficulty.

'TABLOID' KRAMERIA AND COCAINE.

THE value of Rhatany in combination with Cocaine in the treatment of certain affections of the throat is well known in relaxed sore-throat, irritable conditions of the pharynx, bronchorrhœa, etc. Messrs. Burroughs, Wellcome & Co. have introduced a 'Tabloid' preparation which enables the physician to secure the astringent and tonic properties of Krameria with the sedative action of Cocaine. 'Tabloid' Krameria and Cocaine possesses marked advantages over gargles, in that it is portable, and thus conduces to regular treatment when the patient is pursuing his ordinary daily avocation. Its effect is not transitory, but continuous, because, as it slowly dissolves in the mouth, it bathes the affected parts with a concentrated solution, the therapeutic effect of which is quickly evident. In its stability it is in no way inferior to lozenges and lozenges, which are not so effective and rapid in their action. 'Tabloid' Krameria and Cocaine is supplied in boxes of 30, and in bottles of 100.

These purveyors of elegant forms of drugs have also issued the old-fashioned compound Colocyth pill as tabloid, and the Aloes and Iron pill of the B. P. in the same form.

THIOCOL 'ROCHE.'

THIS is a new soluble preparation of beechwood-tar creosote, the active principle of which, namely, *guaicol*, has been in repute for the treatment of tuberculosis. Its penetrating odour like creosote itself rendered its use unpleasant, and it was in other ways objectionable. To overcome these objections *Thiocol* has been introduced. It is a potassium salt of *guaicol*-sulphonic acid. It contains 60 per cent. of pure *guaicol* and is a fine white odourless powder, which at first is slightly bitter to the palate, but afterwards sweet to the taste. The advantages claimed for it are the following:—

1. Absolute freedom from odour.
2. Extremely ready solubility in water.
3. Non-irritation of the stomach.
4. Easy of assimilation.

This absence of odour and irritant effects enable *Thiocol* to be administered in all cases where patients have hitherto exhibited an antipathy to the creosote treatment. Its solubility in water admits of its administration with suitable correctives or syrup aurant. Easily assimilated and absolutely non-toxic, it is of special use in tuberculosis overcoming the night-sweats and improving the general condition; relieving the cough and acting as an antiseptic and antipyretic without irritating the stomach or intestines.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the *Indian Medical Gazette* Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

Year Book of the Scientific and Learned Societies of Great Britain and Ireland: C. Griffin & Co., London, 1899.

Epitome of the History of Medicine. By R. Park, M.D., 2nd Edition. E. A. Davis & Co., Philadelphia, 1899.

Sanitary Reports on Assam and Punjab.

Annual Report on the Medical Institutions of Calcutta, for 1898.

Syphilitic Diseases of Spinal Cord. By Dr. Williamson, Manchester, 1899.

Extra-Uterine Pregnancy. By Dr. J. W. Taylor, H. K. Lewis, London, 1899.

COMMUNICATIONS RECEIVED FROM:—

Dr. A. Powell, Cachar; Dr. R. Ashe, Mymensingh; Captain T. P. Maynard, Hazaribagh; Dr. J. Nield Cook, Calcutta; Captain W. J. Buchanan, Bhagalpur; Dr. F. G. Clemow, London; Dr. T. H. Manley, New York; Inspector-General of Civil Hospitals, Bengal, Assam and Punjab; Messrs. J. P. Legg & Co., London; Dr. D. D. Gupta, Darjeeling; Sanitary Commissioners, Assam, Bengal and Madras; Dr. C. Banks, Calcutta; Health Officer, Bombay; Dr. J. V. Ingham, Philadelphia; Captain C. Fearnside, Rajamundry; Captain L. Rogers, Muktesar; Colonel K. McLeod, London; Messrs. Burroughs, Wellcome & Co., London; Dr. A. Caddy, Calcutta; M. Loukianov, St. Petersburg.

Original Articles.

THE EXAMINATION OF THE BLOOD IN MALARIAL FEVER.

By J. G. McNAUGHT, M.D. (GLAS.),

CAPTAIN, R.A.M.C.

THE following notes are chiefly founded upon the results of examination of the blood in 54 consecutive cases of malarial fever occurring at Deolali from August 1895 to June 1896. In 50 cases or 92 per cent. the malarial parasite was found. The total number of observations was 130. The cases were mostly old infections, that is to say, the patients for the most part had had attacks of malarial fever prior to those for which they came under observation, but a considerable number were first attacks. In the rainy season the cases were by far the most numerous, becoming scanty in the cold season, and gradually increasing again in the hot weather. As will be seen further on, the "summer-autumn" type of parasite was the one by far the most frequently met with. This may be partly due to the fact that the soldier very often does not come to hospital at all for a mild attack of fever, while the weakness and loss of appetite speedily induced by repeated attacks of "summer-autumn" fever soon compel him to do so. On the other hand, in one of the cases of "mild tertian" fever observed at Deolali, the symptoms on admission to hospital were very severe, the patient being delirious, and in several cases which I saw at Quetta in 1898, which presented the clinical symptoms of pernicious malarial fever, only the mild tertian parasite was found in the blood.*

The blood was usually examined unstained under a power of 540 diameters (Zeiss D. and No. 5 eye-piece), but the $\frac{1}{2}$ oil immersion lens was also frequently used. A number of preparations were also stained with eosin and methyl blue, and with borax-methyl blue. In preparing cover-glass preparations for staining, it was found that the best results were obtained by taking up the droplet of blood on the edge of a cover-glass and smearing it rapidly over the surface of another.

The presence of large intra-corporcular pigmented forms, the infected corpuscles being pale and swollen, was the ground for a diagnosis of mild tertian fever. Only three cases of this description were found. The diagnosis of "summer-autumn" fever was based on the presence of numerous unpigmented intra-corporcular

forms, the infected corpuscles not being enlarged, while the intra-corporcular pigmented forms present were small and few in number. In many cases the presence of crescent forms clinched the diagnosis. Forty-six of the cases were of this type, and in sixteen of them crescents were observed.

"*Mild tertian*" forms.—As noted above, only three cases out of fifty belonged to this class. In cases of malarial fever at Quetta, Major Melville, R.A.M.C., found a much higher proportion of this form of parasite, but these were cases contracted in the locality; in cases contracted in Scinde, the parasite was nearly always of the "summer-autumn" variety.

The diagnosis from the "summer-autumn" type was easy, the appearances seen corresponding exactly to those figured in Manson's *Malaria Chart*, J 3, 4, 6. These cases all yielded to treatment by quinine or Warburg's tincture, and did not recur. In one of them the cold stage was very marked and attended by rigors,—in this it contrasted with the "summer-autumn" cases observed.

Notes of illustrative cases.—Sergeant G. contracted malarial fever at Mian Mir in the Punjab, and has had attacks at intervals during the last seven months. Is not cachectic in appearance; spleen not palpable. Admitted to hospital on 13th March 1896, with a temperature of 102°, severe headache, and delirium. He has had fever for a week past, attacking him every second day about 7 A.M. and lasting till 5 P.M.

14th March 1896.—Temperature normal. A few large unpigmented intra-corporcular forms contained in large pale corpuscles; numerous large pigmented intra-corporcular forms. The infected corpuscles were larger and paler than normal; the parasites are in motion and occupy $\frac{1}{2}$ to $\frac{1}{4}$ of the corpuscle. A few large free pigmented discs; pigment swarming; some small free pigmented discs, one-third the size of a red corpuscle, pigment in them also swarming.

15th March 1896.—Temperature normal; normal yesterday evening also. Some unpigmented intra-corporcular forms; one pigmented leucocyte, but no pigmented parasites. Many large granular white cells. This patient had no return of fever while in hospital.

"*Summer-autumn*" fever.—These cases numbered 46, in 16 of which crescents were seen. Out of seven cases of malarial fever occurring at Colaba in July 1899, in which I examined the blood, I found the malarial parasite in five cases, all of which were of the "summer-autumn" type. In two of these cases crescents were present. The various forms of parasite may be commented on in detail.

Unpigmented intra-corporcular forms.—These were almost invariably found in cases

* Malarial Parasites in Fever Cases. Major C. H. Melville, R.A.M.C. *Indian Medical Gazette*, Jan. 1899.

examined at the beginning of an attack of ague, and frequently in cases examined within two days after the temperature fell to normal. The quiescent, ringed form was frequently observed, but by far the commonest appearance was that of a pale shadowy body of constantly changing outline, looking like a stain on the surface of the corpuscle. The infected corpuscles were not swollen like those seen in the mild tertian cases, but they were not shrunken. In colour they often presented a greenish-yellow tinge, contrasting with the pale yellow of the normal ones. The intra-corpuscular amœbæ were very rarely pigmented, and did not correspond with the figures of "summer-autumn" tertian forms shown in the plates of Marchiafava and Bignami's "Parasites of Malarial Fever" (Plate II, figures 10 to 30), but they exactly corresponded with the forms figured in Mannaberg's monograph (Plate II D 36, 37, 38). The extreme rarity of pigmented endo-corpuscular forms, and the fact that I have seen no forms intermediate between the unpigmented parasite and such a form as N8 in Manson's Chart, leads to the belief that the parasite commonly found in the Deccan is an unpigmented one, except as regards the forms belonging to the crescent series. Mannaberg ("Malarial Parasites," p. 355) describes an unpigmented quotidian parasite, and remarks that in cases where crescents have not developed, no pigmented forms may be seen.

Illustrative Case.—Corpl. H. has had daily attacks of ague for a month past, and has become very anæmic. Fever contracted at Kamptee, Central Provinces. Spleen much enlarged.

10th April 1896.—Temperature normal in morning, rose to 102° in evening. Unpigmented intra-corpuscular amœboid forms; pigmented intra-corpuscular forms; pigment yellowish-brown, in motion. Few crescents with dense black pigment.

12th April 1896.—Temperature 98°40'; yesterday morning 98°; evening 99°2'. Numerous intra-corpuscular unpigmented forms; many crescents; small free pigmented spheres, pigment dark-brown, not in motion; some large granular white cells full of pigment and debris. One form just spored shows six small, clear, highly refractive bodies grouped round a central mass of pigment.

16th April 1896.—Temperature has been normal since 11th April 1896. Pale shadowy intra-corpuscular bodies of changing outline; very few crescents; few oval pigmented forms of crescent series and small pigmented spheres: pigment dark brown, non-motile; one or two pigmented leucocytes; large granular white cells.

28th April 1896.—Temperature normal; elevated on 26th and 27th. Unpigmented intra-

corpuscular forms; parasites mostly in "ringed" form. A stained specimen shows similar appearances.

4th May 1896.—Temperature normal. No rise since last entry. Very numerous unpigmented intra-corpuscular amœbæ. Few crescents; one in process of development inside a red corpuscle.

13th May 1896.—Temperature normal. Severe attack of fever on 11th May 1896, attended by purging and vomiting. Numerous unpigmented amœbæ of varying size; one small pigmented disc; pigment in wreath form, non-motile. No crescents.

14th May 1896.—Temperature normal. Numerous unpigmented intra-corpuscular forms, mostly of large size, but some very small; one with pseudopodia in active motion. No pigmented form seen.

Pigmented form.—The following table shows the relative frequency with which the various pigmented forms of the "summer-autumn" parasite were found. The numbers refer to separate observations:—

Crescents alone	...	...	...	...	14
Crescents and spheres	...	...	...	...	17
Crescents, spheres and flagellated bodies	...	...	...	...	12
Spheres alone	...	...	...	...	29
Spheres and flagellated bodies	...	...	...	...	4
Crescents and flagellated bodies	...	...	...	...	2
Flagellated bodies only	...	...	...	...	1

From this it will be seen that flagellated bodies were observed on 19 occasions, and crescents on 45 occasions.

Oval forms of the crescent series were frequently seen. On two occasions crescents were seen in process of development inside red blood corpuscles. The delicate line, indicating the shell of the red corpuscle, stretching across the concavity of the crescent, which Dr. Manson states is invariably present was frequently seen, but in many instances could not be made out, the crescents appearing to be perfectly free. As these bodies circulate in the blood for a long time, it is not unreasonable to suppose that many of them rid themselves of the shell of the red corpuscle which clings to them at the beginning of their existence.

Once a crescent was seen to transform itself into a sphere: the crescent first lost its curve, then becoming a little shorter and thicker, it changed into an ovoid body, and the ovoid body gradually assumed the spherical form.

With regard to the duration of existence of the crescents in the blood, in one case of remittent fever crescents were found in the blood after fourteen days' apyrexia; in the same case pigmented spheres were found after five days apyrexia. During this time the patient, who had become very weak and emaciated from persistent vomiting and inability to retain nourishment, was taking quinine and was gain-

ing strength and weight. In another case after twelve days' apyrexia, during which the patient had been taking quinine and had gained weight and improved in colour, very numerous spheres, crescents and flagellated bodies were found. In one of the cases observed at Colaba, very numerous crescents were found ten days after the temperature had become normal.

Spherical forms were observed more frequently than any other pigmented forms. In size they varied from that of a red blood corpuscle or slightly larger to about half that size. Their pigment particles were frequently observed in rapid movement, "swarming." In these cases the pigment particles were scattered irregularly through the parasite. When stationary, the pigment was sometimes arranged in the shape of a crown, sometimes collected into a mass at the centre of the sphere, but most frequently in a circlet nearer the periphery of the parasite than the centre. The colour of the pigment was most commonly a brownish-black, but varied very much reddish-black, greenish-black, yellowish-brown, and, rarely, blue-purple pigment being observed. From these free spheres flagellated forms were frequently seen to develop in the following way. While watching a sphere which on first coming into view was motionless, its pigment particles were noticed to assume rapid vibratile movements; small amœboid processes were thrown out and retracted; next flagella were thrown out as long, rapidly moving arms; these lashed about with great energy, causing quite a whirlpool in the neighbourhood of the parasite, and as they impinged upon the adjacent blood corpuscles, they bent in their sides and pushed them about. Free flagella were sometimes seen moving about among the blood corpuscles with tortuous movements so rapidly as to be difficult to follow. On one occasion a spherical body with a single long motionless flagellum attached to it was seen, but this was the only occasion on which a dead or quiescent flagellum was noticed; the others were in constant motion of the most energetic kind.

Clinical features of the cases of "summer-autumn" fever observed.

As regards the course of the temperature, it generally took an irregular quotidian type, though cases of perfectly regular quotidians and tertians also occurred. Opportunities of observing the temperature over any considerable number of days rarely occurred, as almost invariably the fever disappeared after the patient had been a day or two under treatment. As many of these patients gave a history of recurring attacks of fever extending over many days, the rapid disappearance of the symptoms in hospital is a testimonial, if any were required, to the efficacy of quinine.

A few cases of remittent malarial fever were observed: in these the temperature kept conti-

nuously elevated, though with wide variations from day to day, for three to six days. Cases of continuous fever, lasting for ten days and longer, I do not believe to be malarial in nature: at all events such cases occurring in European soldiers ought, in my experience, to be considered mild forms of enteric fever. For this belief I shall later on adduce some proof. The parasite found in the genuine cases of remittent fever observed was of the "summer-autumn" variety, and crescents were almost invariably present.

Recurrences were frequent, usually from ten days to a fortnight after the original attack subsided.

The cold stage was often absent, and almost invariably slight in character, being represented only by feelings of chilliness, not by distinct rigors.

Although so many of the cases were of the "summer-autumn" type, dangerous complications were very rare, though persistent anæmia and enlargement of the spleen were frequent sequelæ. In one case each attack of fever was accompanied by the development of moist râles over the bases of both lungs, which disappeared with the febrile paroxysm. Another patient was admitted to hospital on three separate occasions, and on each in a state of collapse, with feeble pulse, cold extremities and severe bloody diarrhœa, the motions resembling raw meat juice. The most severe cases occurred in a group of men who had contracted the disease at Karachi. This group was sharply defined from the others by the severity of the symptoms,—intense headache and lumbar pain, pain and tenderness in the hepatic region, persistent vomiting, in some cases jaundice and the passing of very dark brown urine. Microscopically parasites of the "summer-autumn" type were found in all these cases, large free pigmented forms being very numerous.

As regards the diagnosis between a continued malarial fever and enteric fever, the finding of the parasite does not settle the point, as in a malarious district it is very common to find that the development of enteric fever has been preceded by attacks of malarial fever. The old idea that there is an antagonism between the two diseases is an erroneous one: it is rather the case that malaria predisposes to contracting enteric fever. At Quetta, in 1898, the men of the Wiltshire Regiment, who had suffered severely from malarial fever at Karachi, suffered severely from enteric fever. In many cases the one disease followed closely on the other. In one case of enteric fever treated at Deolali in 1896, the parasite was found during the time the patient was under treatment for enteric fever: in this case the clinical symptoms, and the fact that he formed one of a group of cases of enteric fever occurring in the same body of men,

were sufficient to establish the diagnosis. Generally attacks of malarial fever may precede and follow the attack of enteric fever, but do not occur during the time it is actively running its course, though I have seen typical attacks of ague in the course of an attack of enteric fever, in which the temperature, appearance of the tongue, typical diarrhoea, and rose spots, left no room for doubting the diagnosis. In the *Journal of Tropical Medicine* for December 1898, a case is reported in which the malarial parasite was found at the onset and during convalescence* in a case of enteric fever verified by positive serum diagnosis.

In working out the diagnosis of continued fevers in India, Vidal's test is of the utmost value. By its application to cases occurring at Quetta in 1897-1898 Major Melville and myself were able to show that many cases of continued fever without distinctive features were cases of enteric fever. A few examples may be quoted in illustration of this point.

Pte. H., an old soldier with a history of former attacks of malarial fever, was admitted to hospital with fever of rather irregular type, accompanied by sweating and occasional exacerbations. Clinical symptoms not distinctive. On the seventeenth day of illness a positive serum reaction was obtained by Vidal's test. Later on, while convalescent, he had a relapse, during which thrombosis of the femoral vein occurred.

Lieut. H. was admitted to hospital with irregular fever, sweatings, hepatic congestion, and slight jaundice. He had suffered from malarial fever, and his disease was at first considered malarial remittent. A positive serum reaction was obtained on the eighth day of illness. His temperature fell to normal at the end of the third week, and did not fluctuate thereafter.

Pte. C. admitted with headache, furred tongue and fever. No other symptoms. Bowels constipated throughout. Temperature fell to normal on fourteenth day. A positive serum reaction was obtained on the third, fifth, and twelfth days of disease.

Among the women and children I had two family groups of cases: in each group the mother passed through a severe and clinically typical attack of enteric fever: in each group the disease in the children was not clinically distinctive, if we are to look for a sum of the text-book symptoms to constitute this, but in them as well as in the parents the serum test gave positive results.

THE ADVANTAGES OF A MICROSCOPICAL EXAMINATION OF THE BLOOD IN CASES OF FEVER IN INDIA.

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THERE can be little doubt that by far the greater number of cases seen by medical men in this country are cases of fever. In the 6th Infantry, Hyderabad Contingent Hospital, for example 52.4% of the total admissions were for fever during the year ending 31st July 1899. It is evident therefore that a thorough knowledge of the fevers of India is very important for all medical men in this country.

Up to the present too little has been done towards differentiating and classifying the fevers of India. This is partly due to the fact that the majority of the fevers of this country are not associated with any distinctive exanthems, and their clinical symptoms are frequently very much alike. But there are two chief factors which have hindered the differentiation and proper study of the fevers of India, viz.—

(1)—The want of adequate apparatus for working with.

(2)—The misleading and careless habit of calling every case of fever of short duration, as well as those cases which show an intermittent character, "Ague."

Dr. A. Crombie has attempted a classification of the fevers of India on a clinical basis, which so far as it goes, is of distinct value, while the true cause of the fever still remains unknown. In order that any progress may be made in the study of fevers, it is necessary to apply the knowledge we already possess conscientiously to all cases of fever. We are able at the present time by the microscope to differentiate by an examination of the blood at least four fevers, viz., Malaria, Relapsing Fever, Typhoid (by Vidal's test), and Malta Fever. Occasionally we may in cases of Plague find the *Bacillus Pestis* in the blood. If this examination were applied to all cases of fever, without doubt there would remain yet a few cases, which would come under none of these heads, but a number now so small that a comparatively easy study could be made of them.

When Plague is present in any district its early and correct diagnosis is of the utmost importance. In many suspicious cases it is possible to demonstrate the presence of the *Spirillum Obermerii* or the *Plasmodium Malariae*, and so enable such non-infectious cases to be separated from the infectious or probably infectious, to say nothing of the comfort and relief given to the patient and his friends under such circumstances.

* "A Case of Malarial Fever with Intercurrent Attack of Typhoid Fever." F. Kenneth Wilson, M.B., B.S. (Lond.), M.R.C.S., L.R.C.P. *Journal of Tropical Medicine*, Dec. 1898. [v Editorial, *I. M. G.*, April, p. 197, on "Combined Malarial and Typhoid Infection."—Ed., *I. M. G.*]

The most difficult type of Plague to diagnose perhaps is the primary septicæmic form, and these are the cases in which a microscopical examination of the blood is most likely to prove of use. I have been able to isolate such cases by finding the bacillus in the blood fifty-one hours before death. It is possible too, that until such a time as the Plague Bacillus is present in the blood (except in pneumonic cases), infection by that case cannot occur, or at least can occur with difficulty; but when the bacillus is present in the blood, it can often be shown to be present in the urine also, and if in that secretion probably in others; but owing to the presence in these secretions of contaminating microbes of rapid growth, it is difficult to demonstrate the presence of so slow growing a bacillus as that of Plague. Hence the detection of the bacillus in the blood is a warning that the case is one from which infection is being spread broadcast.

It is of great use to know that a certain case of fever is a case of "Relapsing Fever" by finding the spirillum of that disease in the blood, for we are then able to keep the patient in bed during the apyrexial period, and so greatly favour the ultimate complete and rapid recovery from the disease by husbanding the patient's strength. We are able too, by judging of the number of spirilla present in a certain sample of blood, to make a shrewd estimate of the probable severity of the disease.

The following extracts from notes of a case of rather complicated diagnosis are of interest as showing the great benefit of an examination of the blood, although negative results may only be obtained.

"Gambai," age fifteen years, wife of musician Kasiram, was first seen by me in the lines on the 11th July 1899. She had been ill at that time for about a fortnight; no definite date could be attributed to the onset of the disease. She was then suffering from fever and great weakness; diarrhœa with pea-soup stools; pain in the right iliac fossa; slight enlargement of the spleen, a furred tongue. In both lungs over back and front there were numerous large bubbling and small clicking râles, but no dulness on percussion. Considering her condition, I thought it advisable to take her into hospital, the more because a suspicion lurked in my mind that the case might be one of typhoid fever.

On the afternoon of the 11th July while in hospital a thorough examination was made of her condition which was much the same as that mentioned above. Her temperature was 103°F.; pulse rapid and somewhat feeble, but regular and numbering about 115 per minute. The abdomen was carefully examined. No rash was noted. A small tumour was detected a little to the left of the middle line and slightly above the umbilicus. There was pain in the right iliac

fossa on pressure, but no tumour or infiltration could be detected there. The stools were loose of a pea-soup colour, the bowels moving at least twice daily.

The lung conditions were as described above.

The blood was examined microscopically for malaria, and by Widal's test for typhoid fever. Both tests gave negative results.

13th July 1899.—The general condition of this patient remains much the same. She complains greatly of her cough which causes her pain. The sputum consists for the most part of mucus, very little mixed with pus. No blood is present in it. To-day she complains greatly of pain in the abdomen; the situation of the pain or rather the chief intensity of the pain has changed from the right iliac fossa to an area along the right costal margin. Here on palpation friction fremitus is evident, and is also easily detected by auscultation. There is to-day considerable tenderness over the tumour previously noted, and it appears to be a little larger in size. The pain extends from the tumour towards the right. Her cerebral condition demands a passing note. When asked a question she looks vacantly for a time, apparently not understanding what has been said, but answers slowly and correctly after a short interval.

19th July 1899.—The condition of this patient has not improved. A subacute form of peritonitis still exists, and her cough is very troublesome causing much pain.

21st July 1899.—Patient remains much as before noted. She has become much emaciated, and the abdominal tumour is if anything larger. The peritonitis to-day is not so severe. No effusion can be detected. The pulse still remains very rapid, and now numbers 160 per minute, respirations 64, and temperature this morning 101°F. There is always a slight evening recrudescence of temperature of from one to two degrees.

22nd July 1899.—Remained in much the same condition as previously noted.

23rd July 1899.—Patient to-day is a little weaker.

24th July 1899.—Yesterday forenoon there was a marked change for the worse in the condition of this patient. She passed two or three blood clots by the rectum, and this was followed by a rapid fall of temperature to 98°F., and was accompanied by a profuse cold perspiration. She, however, rallied for a time, but half an hour before her death at 4-45 P.M., on the 23rd July, she passed some more blood. Towards the end the patient had become more and more drowsy appearing not to quite appreciate what was said to her. She never at any time complained of pain in the head. The girl although fifteen years of age had never menstruated. Unfortunately no *post-mortem* was granted.

The diagnosis of this case undoubtedly lay between typhoid fever and miliary tuberculosis, and from the negative results obtained by Widal's test I am inclined to favour miliary tuberculosis.

The infection of the intestine by tubercle bacilli was probably the first event in the history of the disease. This led to infection of the mesenteric glands causing their enlargement (the tumour felt on palpation of the abdomen) and ulceration of the intestine. A slight degree of peritonitis seems at first to have been present in the right iliac fossa, the usual situation of tubercular ulcers. Later by the bursting of an enlarged mesenteric gland a slightly more acute diffuse peritonitis arose. General infection seems to have occurred early in the case judging from the well-marked lung signs as well as the cerebral symptoms. The hæmorrhage from the intestine, the ultimate cause of death, was from deep ulceration.

I was almost persuaded at first sight to consider this case one of typhoid fever, but giving a negative result with Widal's typhoid test I was compelled to look for something else; the detection of the small tumour in the abdomen would have been considered of little importance and passed over as a scybalous mass in the intestine had not a negative result been obtained by that test. This tumour then arose into importance, and led, I believe, ultimately to the proper diagnosis of the disease.

Not only is the microscope of use in the diagnosis of fevers, but I believe of much use in the treatment and prognosis of the fevers. In the above case, on the third day after admission, a very grave prognosis could only be given, the diagnosis having led to the opinion that the case was one of miliary tuberculosis.

In the treatment of ague I believe it is of the utmost importance to study the life cycle of the parasite as the following case illustrates.

Sepoy Ramcharran, age forty-two, service twenty-four years, was admitted into hospital suffering from quartan ague.

The patient stated that he had had two attacks of fever in the lines occurring on every fourth day. He was admitted with the third attack, but when I saw him next morning the fever had gone. An examination of his blood at this time revealed nothing. He was detained in hospital. On the following fourth day, 9th July, he had his fourth attack of fever, the rigor beginning at 2-45 P.M. At 3 o'clock he was examined. He was then shivering and complaining of cold and was very restless. His temperature was 102° F. in the axilla, pulse 80. Respirations very rapid and irregular. At 3-15 samples of his blood were taken, and the sporulating stage of the malarial parasite was demonstrated to the Hospital Assistants. The spores numbering from six to eight were collected more

or less regularly round a central mass of pigment. The spores themselves were round and slightly less than quarter the diameter of a red blood corpuscle, and contained a small more brightly refractive centre. Specimens obtained at a later hour (7-30 P.M.) showed the parasite as a very small speck attached to, or within the red corpuscle. Later specimens when the temperature was normal revealed nothing.

Treatment was begun at the beginning of the next attack. The attacks generally began about 3 o'clock so at that hour on the 12th July he received hypodermically 1 gr. Quin. Sulph. dissolved in Spt. Ammon Aromat. The rigor began at 4-45, and I considered, from the previous study of the parasite in his case, that sporulation would be completed about 6-30 P.M. At 7 P.M. he received 1 gr. Quin. Sulph. dissolved in Spt. Ammon Aromat. hypodermically. His temperature was then 104.2°. The fever was gone by 10 P.M. when his temperature normal.

On the 16th the date of the next period, he passed through the day all right, but at 11-30 P.M. he had a slight rigor, and his temperature went up to 100.4° F. The fever only lasting for a very short time. No treatment was adopted on this occasion. On the 22nd July the patient was discharged having passed through two periods without fever and without further treatment.

The object aimed at in the treatment was to inoculate quinine directly into the blood at the time of the completion of sporulation, just when the young parasites were free in the blood before they had attached themselves to the red corpuscles. They were then in a vulnerable condition, being young individuals and free in the blood. Once within the red corpuscle it would be more difficult to kill the parasite; it has, as it were, protected itself by the red corpuscle and could not be easily killed till the red corpuscle had been destroyed also. Hence large doses of quinine by the stomach are necessary, especially if given without any thought as to the exact stage of development of the parasite. The quinine then kills the red corpuscle as well as the parasite, and we see this fact exemplified in some cases where hæmoglobinuria occurs after the administration of quinine. Evidently from the want of success of the first small dose of quinine hypodermically in this case, that medicine in small dose has little effect on the rapidly maturing or matured parasite, for the rigor came on shortly after the first injection.

This method of treatment must commend itself on account of the ease with which it can be applied, and the little inconvenience to the patient, and based as it is on the true pathology of the disease.

Apart from microbes an examination of the blood enables us to study the polynuclear white corpuscles, the soldiers of our body. When an

individual is resisting an acute infection well, the number of the polynuclear cells in the blood is increased. We view as it were the line of march, and see the advance guard marching to the attack. With a rising temperature and with many leucocytes in the blood the prognosis of the case as a rule is good. The temperature is an indication of the fierceness of the battle and the number of leucocytes the reserve forces coming up to strengthen the front attack. With a falling temperature and the presence of very few leucocytes in the blood a crisis can almost be predicted with certainty. The furor of the battle is over, no more reserve forces are required to advance, the line of march is free from troops; they are all in their camping grounds.

With a rising temperature and a deficient number of leucocytes in the blood, the individual's resistance is not great, and the prognosis is as a rule bad. The enemy presses hard at the front, and threatens to become victorious, the reserve forces are wanting, and the day is about to be lost.

In this way a rough sort of prognosis can be made. I have had several opportunities of confirming the above rules, although I cannot state that they are infallible. I could give many instances of cases where the patient has been severely ill with very high temperatures, but an examination of the blood has told me that the fight is progressing favourably, and I have been able thus to keep a light heart.

By the microscopic examination of the blood of a patient suffering from fever we may be enabled—

(1) To diagnose the disease or at least exclude certain well-known fevers, and so leave a few fevers, the nature and cause of which are more or less unknown, and thus enable us the better to study them.

(2) To give a good or bad prognosis by excluding certain virulent fevers, or specifically demonstrating the fever to be one of the less fatal ones. We may be able to estimate the individual's power of resistance to the infection, by a study of the number of his polynuclear white blood corpuscles present in the blood.

(3) To treat certain forms of fever on rational principles, so that much valuable medicine is saved, and the patient's stomach not upset by the wholesale administration of drugs at inopportune moments. We attack the fever in the bud and inoculate into the midst of the enemy a specific poison, not trusting to the changes and chances that may occur in a stomach, the chemistry and absorptive power of which we know so little.

(4) In certain infectious septicæmic diseases, such as Plague, we are enabled to know what at least are the very dangerous cases in respect to the spreading of infection by detecting the

particular bacillus in the blood. We are thus warned of the necessity to adopt stringent measures for the prevention of the spread of the disease.

It will be understood from the above remarks that a microscopical examination of the blood of patients suffering from fever may help us in the diagnosis, prognosis, treatment and prophylaxis of the disease, and the importance of performing such an easy operation must be evident to all.

MALARIAL APOPLEXY.

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THE various forms of malignant malaria, the cerebral, the algide, choleraic, dysenteric, &c. have come under my observation during the last two and a half years in the Central Prison of Rajahmundry. Errors in the diagnosis of pernicious malaria are easy if the microscopic examination of the blood is not freely resorted to, and I have mistaken cases of uræmic coma for that of malarial coma. Siriasis is easily mistaken for this form of malaria, and those individuals who are attacked with heatstroke, if they have been previously exposed to malaria, or are living in malarious tracts, should be received with suspicion, and the blood should be examined microscopically to clear up any doubt. The morphology of the malarial sporozoon has, I think, received more attention than the lesions produced by it on the various organs. Little or nothing is at present known regarding the morbid anatomy of the nervous system produced by this cytozoon, and more research in this direction is called for. It will probably be found that there are as many pathological changes due to this disease as there are ascribed to syphilis. If the organism is found to destroy such organs as the liver, spleen, &c., it is but reasonable to suppose that the nervous system also undergoes considerable alteration. The brain like the spleen and bone marrow is one of the nurseries of Laveran's bodies, and it is still a matter of doubt whether the coma produced in this type of malaria is the result of embolism of the cerebral arterioles by the parasites themselves or to poisons set free in the blood. Dr. Thin and others have shown that the endothelium of the arterioles absorbs pigment and I presume that in having done so there must follow for the time being an altered condition of the capillaries. This of course will lead to stasis and embolism. In the present case it will be found that very minute hæmorrhages took place in the brain and cerebellum, and had the patient recovered, it would have been interesting to note what lesions would have occurred. Such

minute hæmorrhages and blocking of the capillaries in the liver, spleen, &c., cause malarial necroses and reasoning from this analogous condition we may, I think, safely assume that the same lesion is most likely to occur in the nervous system. No one hears of a paraplegia or cerebral softening the result of malaria, yet we have as dangerous a malady to deal with as syphilis, which causes these lesions. Dr. Patrick Manson recorded a case similar to that of the present case in the *British Medical Journal*, February 1st, 1896. In Hongkong, Dr. Manson goes on to relate, a mining engineer of good physique, but who had been working previously in a malarious district, while out for a walk one evening felt chilly, and on returning to his hotel, had the usual shivering fit of ague. A strong stimulant was given at the suggestion of the landlord of the hotel, and soon after the patient became delirious and violent. On Dr. Manson's arrival the patient had become quiet, lying on his back quite unconscious. His breathing was stertorous, his face flushed, his skin dry and burning. Everything was done to reduce the temperature; a hypodermic injection of quinine was sent for, but before it arrived the pulse flickered, went out and the man died.

Present case.—Subba Rao, aged about thirty-five years, was a delicate man, who had had much malarial fever, and whose spleen was enlarged. During his two months incarceration, he had been singularly free from fever, and never complained of any sickness. He had five grains of quinine and cinchonidine on alternate days—the usual prophylactic issued to all the prisoners during the colder months of the year. On the morning of the 21st March last, he cooked and ate his midday meal about 10-45 A.M., and he felt in his usual health. Soon after he complained to the other prisoners that he felt feverish, and went to lie down on his *pyal* in the ward, and began to shiver. At noon the other prisoners not being able to get him to answer their questions, the hospital assistant was sent for, who had the patient conveyed to hospital in an unconscious condition. The temperature was 105°, and the case looked like one of heatstroke. When I saw him, he was comatose, his tongue was drawn back, there was slight twitching of the lips. His eyelids were half-closed, and at times he glared at the attendants. The eyeballs rolled from side to side, the right pupil being slightly dilated. The head was drawn to the right side, and if moved to the left it quickly resumed its former position. The breathing was hard and stertorous. His hands and legs shook at times as if the motor centres were being stimulated, the hands were frequently clenched. The bowels were freely evacuated by enema and quinine injected into the bowel. At 5 P.M. his blood was examined and found to contain half-grown malarial parasites. The

temperature remained very high all night in spite of all that was done to reduce it. The motions and urine were passed involuntarily into the bed. Early next morning I saw him in exactly the same state. I injected quinine hypodermically. The patient never rallied and died at 8-45 A.M.

Blood examinations.—On the first day blood taken from the finger contained pigmented spheres, much free pigment and flagellates. Some of the parasites were only half-grown, the corpuscles containing the hæmamoeba were somewhat brassy. On next day the blood contained many young plasmodia, ringed discs, hyaline plasmodia, broken up spheres, leucocytes and phagocytes carrying much free pigment of a sepia-brown colour. The hæmaglobin of the red cells was pale.

Post-mortem appearances.—The body was badly nourished, little fat in the areolar tissues, an old pigmented scar on the forehead, with a corresponding depression on the frontal bone, the result of old syphilis. *Brain* weighed 46½ oz. All the superficial vessels were engorged with blood, the grey matter was darker in colour than normal, and all blood vessels highly injected. *Heart*, 7 oz. The pericardium contained 2 oz. of serous fluid, small friction spots on anterior and posterior surfaces. Valves competent. Just above the aortic valves are numerous small white cicatricial areas, about the size of a split-pea, the result of old endarteritis, which may have occurred during his frequent attacks of ague or be due to syphilis. *Right Lung*, 13 oz., showed old adhesions, the result of pleurisy; lower lobe congested, upper lobe oedematous. The lower lobe slightly indurated with fibrous tissue. *Left Lung*, 14 oz., in a similar condition. *Liver*, weight 49 oz., enlarged, congested, fibrous with cicatricial areas throughout, partly due to malarial necroses and alcoholism. The whole surface is pigmented and gives the black reaction of "yellow pigment" with ammonium sulphide. *Spleen*, 20 oz., upper part firmly adherent to the diaphragm, thick layer of old fibrous tissue adherent to the spleen, cicatricial areas of a dark brown colour, and fibrous cicatricial depressions on the surface. Hæmorrhagic spots on the surface (malarial necroses). *Right Kidney*, 4 oz., enlarged; elongated fibrous, considerably distorted, large cicatricial depressions on the surface, cystic, cortex wasted, pyramids in places obliterated, and capsule torn away with difficulty. *Left kidney*, weight 4½ oz. large cysts throughout, one the size of an almond, another the size of a walnut. In same state as the right kidney (*N. B.*—Both kidneys are the result of malarial fibrosis). *Intestines*, healthy, one round worm found in the bowel.

Lung Blood.—Leucocytes contain much pigment.

MALARIAL APOPLEXY.

CIVIL DEBTOR No. 476.

I.

Blood taken from finger
15 hours before death.



a

b

II.

Blood from finger taken half an
hour before death.



a

b

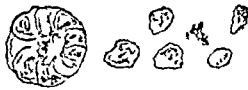
III.

Blood from Brain Capillaries,
six hours after death.



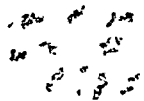
IV.

Blood from Spleen, six
hours after death.



Blood from Liver.

V.



- I. (a) Half-grown parasites, corpuscles somewhat "brassy." (b) Small flagellate body.
- II. (a) Hyaline haemamoeba (b) Corpuscle distorted by the haemamoeba or the cover-glass.
- III. Plasmodia in blood cells of the brain; flagellate and half-grown parasite.
- IV. Dead pigmented sphere, deposits of free pigment, sporulating body and half-grown pigmented parasites. Pigmented leucocytes and phagocytes.
- V. Sporulating bodies and free spores, sphere being absorbed by a phagocyte (pigment motile). Free pigment in small agglutinated masses.

Urine taken from bladder and examined the following morning. Sp. gr. 1014, albumen $\frac{1}{2}$. (1) squamo-granular, (2) pyriform cells, (3) columnar epithelial cells, (4) granular casts, (5) blood casts.

The blood from the brain (stained by saffron solution) shows that the brain cells were stained with free pigment and malarial parasites.

The pigment.—Throughout the various viscera the pigment was of a sepia-brown colour, and in small specular grains. Major Ross is inclined to think that the colour of the pigment may possibly be a characteristic of different species of this sporozoon. I am of opinion that the colour of the pigment mainly depends on the richness of the hæmoglobin in the red cells. The richer the hæmoglobin, the darker is the colour of the pigment. In the livers of a number of chronic malarials, I have noticed a tendency of the pigment to agglutinate into small masses. It appears swollen and altered, much like the pigment I have observed in proteosoma coccidia in the stomach wall of *Culex pipiens* on the second day. It is probable that the pigment, either from some action on it by the phagocytes or liver cells, is being chemically changed, rendering it more soluble for absorption.

The Cerebrum and Cerebellum.—Small areas appear to have been torn up by very minute hæmorrhages, which showed a clear area round the margin, but with a fibrinous clot in the interior. These areas measured about 10 μ . and 15 μ . and contained granules of pigment (melanin) of a brown colour and a few corpuscles containing half grown parasites. The small capillaries and arterioles, as well as the smaller venous sinuses contained parasites in their various stages of development. There was much free pigment in the venous sinuses. I am inclined to believe that pigment was also present in some of the endothelial cells of the arterioles; at any rate free pigment lay over some of them, which may have been driven into this position in cutting the section. Free spores were noticed as well as large pigmented spheres in the capillaries. Plates IV and V shew half grown parasite and free spores in the smaller vessels.

The Heart.—A few parasites were observed in the smaller arteries and little or no melanin pigment. Small granular masses, composed of 5 to 10 granules of an ochre colour pigment, were to be seen lying between the muscular fibres. It had the appearance of the yellow pigment of malaria.

The Liver.—The portal zone (seen in Plate I) contained most melanin and could be seen also in streaks radiating from the central zone. The melanin was of a sepia-brown colour and in small agglutinated masses, probably undergoing some chemical change prior to absorption.

Both pigments were in considerable amount in the neighbourhood of the fibrous trabeculae. Ochre pigment was found both in the liver cells

and outside them in small masses. The dissolving action of ammonium sulphide on the melanin is exemplified in Plate III, where the section was left twenty-four hours in that reagent. The spleen carried much sepia-brown pigment free in the interspaces and in the leucocytes and other splenic cells. The fibrous trabeculae were much thickened and pigment deposited near them. Half-grown parasites and pigmented spheres were also present.

The Pancreas.—No pigment was observed, the fibrous stroma appeared thickened, and the nuclei of the cells were large.

The Kidneys.—The action of malaria on the kidneys is still a matter of discussion. Albuminuria is common in the acute stages of ague, and the kidneys must, therefore, be in a congested state. In a paper recently published I have endeavoured to prove by microscopic examination of the kidneys that a chronic desquamating stage follows these repeated congestions. Further that an interstitial fibrosis is set up which destroys the renal secreting apparatus and gives rise to cysts and microcysts. Cirrhosis in advanced cases is marked, and the cysts vary from 30 to 40 μ . to the size of a pea or almond. The kidneys in the present case are examples of the fibrosis and microcystic kidney of malaria or following malaria. The kidney is riddled with minute cysts; there is a large deposition of fibrous tissue and the tubules are gradually being destroyed. In some areas, and confined to certain tubules the epithelium contains minute granules of a much lighter colour than that of the ochre pigment found generally in the liver and spleen. It is quite possible that these granules are really ochre pigment and cause epithelial desquamation, epithelial casts having often been found in the urine after death. In other tubules, especially the convoluted, the nuclei were very large and showed that active cellular division was about to take place.

I am indebted to Mr. Mitchell for the drawings.

NOTE ON CERTAIN CASES OF HYPERPYREXIA.

By C. DUER, M.B., F.R.C.S.,

CAPTAIN, I.M.S.

Junior Civil Surgeon, Rangoon.

CASES of sudden death are all too common in India and Burma, but none perhaps are more sudden and unexpected than those arising from hyperpyrexia; and they are all the more shocking because, in the majority of instances, I believe, if a medical man happens to be present he is able by the application of cold to reduce the temperature and save the patient.

The following is a good example of these cases of hyperpyrexia. A strong, healthy-looking young man, aged twenty-three, who had lead an active open air life in India for some four or five

years, came to Rangoon some four months ago. He got up on the morning of Thursday, June 15th, in good health, but towards the afternoon began to feel ill, and his temperature that evening rose to 104°. He passed an uncomfortable night and did not perspire. I saw him at 4 P.M. on Friday, June 16th. He was not delirious. He complained especially of not being able to sweat, and that he was passing urine rather frequently and in considerable quantity. The chamber-pot under the bed was nearly full of clear urine of normal colour. His pulse was just over 100 and temperature 104.6°F. Ten grains of phenacetin were given at once, and a quinine mixture and dose of bromidia at bed time ordered. He was seen by his friends at 8 P.M. when he expressed himself as feeling better. At 9-30 P.M. he was found moribund and very shortly died. The temperature was taken in the rectum just after death, and the mercury rose to the top of the thermometer which was graduated to 112°. I saw the body next morning, and it presented an almost universal bluish congestion of the skin. This I have noticed in other patients dying from hyperpyrexia.

Now I had attended this patient during the preceding week for what I considered to be a slight attack of malarial fever. The fever lasted about three days, the maximum temperature being under 103°, and it subsided under quinine. The patient told me that he had suffered from occasional attacks of fever of short duration in India which got well under quinine. He had no enlargement of the spleen, anæmia or other signs of chronic malarial poisoning.

(To be continued).

NOTES ON THE USE OF SULPHATE OF CINCHONIDINE AS A PROPHYLACTIC.

BY J. FRENCH-MULLEN, M.D.,

LIEUT.-COLONEL, I.M.S.,

Civil Surgeon, Rajshahye.

IN looking over my reports for the past three years, I find that the administration of sulphate of cinchonidine as a prophylactic was begun on the 1st July 1896, and continued to the close of the year. It was given in 5-grain doses every other day in solution. In my report for 1896, I spoke highly of its prophylactic influence, laying special stress on the generally mild character of the remittent fever cases that come under treatment during its administration. Its influence in checking bowel-complaints seemed equally remarkable, but this I attributed more to the dilute sulphuric acid in which it was dissolved than to the drug itself. No deterioration in the general health of the prisoners was noticed at this time as a result of its administration. 1896 was an unhealthy year, both in the jail and in this district generally.

The year 1897 was a remarkably healthy one, both in the district and in the jail. Sulphate of cinchonidine was administered to the ordinary gangs throughout the year. In my report for 1897, I laid stress on the fact that the remittent fever cases, although more numerous than in previous years, were of a milder type, and this I attributed to the administration of cinchonidine. But further on I find the following paragraph:—

"The effect of the administration of sulphate of cinchonidine on the general health of the prisoners was beneficial. It seemed to act as a tonic when a tonic was needed, and in all cases to exercise a bracing influence on the bowels, thereby conducing to the very satisfactory decrease in the number of dysentery cases among the prisoners in 1897 as compared with the previous year."

The above paragraph shows that, up to the time the 1897 report was written, namely, in January 1898, I noticed no injurious influence exerted by the drug.

The year 1898 was an unhealthy one in the district, and the mortality registered in the jail was the highest for several years. I take the following from my report:—"The higher death-rate in 1898, as compared with the previous year, was due to three causes: (1) the greater unhealthiness of the latter half of the year under review, when malarial fevers prevailed in the district to a very unusual extent owing to the high and prolonged inundation; (2) the invasion of the jail by influenza on three several occasions (in April, August and October); and (3) the admission of an exceptionally large proportion of prisoners in bad health, both from the local courts and the affiliated jails." Owing to the low death-rate of this jail in 1897, the affiliated jails were encouraged to send their weakly prisoners to us. Again, owing to the Jubilee releases in 1897, the number of prisoners received by transfer from other jails in 1898 was unusually high. These facts must be given their due weight in considering the question of the general health of the prison population in that year. But after making due allowance for these factors it appeared to me that they did not satisfactorily account for the general deterioration which was apparent, and so I felt constrained to add the continuous administration of cinchonidine to the other factors. The Inspector-General in his former visits to this jail had always been struck by the healthy appearance of the general body of prisoners. Last year he thought the general body of prisoners looked very unhealthy. I agreed with him. In July 1898, owing to the large number of prisoners seeking admission for fevers, cinchonidine, which was administered on alternate days only in May and June, was now administered daily. But in spite of its regular

administration, the admissions for fevers increased, and in August they became so numerous that, on the 15th of that month, I gave up its administration altogether for the time being. In my Sanitary Sheet I find the following:—"Towards the close of October the number of admission for fever and bowel-complaints suddenly increased, whereupon the daily administration of sulphate of cinchonidine (in 5-grain doses) was resumed and continued for a week. For the future I intend administering sulphate of cinchonidine to the general body of prisoners only when fevers or bowel-complaints, or both, are prevalent in the jail." The administration of cinchonidine for a week in October, I should have stated, seemed to be attended with success. The above remarks together with the accompanying figures appear to exhaust the general question as regards this jail.

The prevailing type of fever in August 1898 was attended with bronchitis, was it true influenza? * If so, perhaps it is unfair to blame cinchonidine for not preventing its incidence. We had true influenza in the jail in, I think, 1891; but at that time the disease was prevalent throughout the district and, indeed, the province. The chest symptoms were far less pronounced in 1898 than in 1891.

The regular administration of cinchonidine has no prophylactic influence as regards the admissions for remittent fever, which have been far more numerous since 1896 than they had formerly been. As regards the character of the disease, the cases admitted since 1896 have been almost uniformly free from head symptoms. I have credited sulphate of cinchonidine with this satisfactory state of things, but it has occurred to me that it may have been due to the administration of large doses of quinine from the very earliest stage of the disease. Up to 1896, I do not think I gave quinine so freely. Does intermittent fever occur in my jail? I think it occurs in a mild form among the prisoners of the ordinary gang; but I have rarely met with a case of true intermittent fever in the jail hospital, although I treat scores of such cases every morning at the charitable dispensary. Some years ago I was asked to experiment on intermittent fever cases with sulphate of cinchonidine, but neither in the police hospital nor the jail hospital could I find any cases of true intermittent fever.

I have largely used sulphate of cinchonidine at the charitable dispensary, and with the most convincing proofs of its efficacy as an antiperiodic. It is perhaps a little weaker in its action than cinchona febrifuge; but it is also less liable to produce disagreeable effects.

Since October 1898, no prophylactic has been given to the ordinary prisoners. Up to the 1st August 1898, some 15 prisoners died; up to

the same date in 1899 only five died. The Inspector-General has just inspected the jail, and in his remarks has stated that what struck him most was the great improvement in the health of the general body of prisoners. It should be said that there have been comparatively few transfers from affiliated jails this year, and that those received were generally not so tainted with disease. Again, although fever has prevailed extensively in the district since the onset of the rains, no waves of sickness have been noticed by me comparable with the three distinct waves of the previous year.

It happens in some years that the general tendency among the prisoners is towards good health and better health, and in others that there is a general tendency (excluding the robust) in the opposite direction. In the latter half of 1896, and during the whole of 1897, the upward tendency was noticeable, and very possibly the general administration of cinchonidine acted as a stimulant and tonic to the system in the great majority of those who took it. In 1898, on the other hand, a large proportion of the prisoners, as regards health, was in what I may call a condition of unstable equilibrium, and during several periods there was a marked and pretty general tendency in the downward direction. When this condition prevails, it seems reasonable to suppose that the general administration of cinchonidine will prove harmful, the system not being strong enough to bear it. This theory would explain the apparently injurious effects on the health of the general body of prisoners produced by its administration in 1898. I think every jail should judge for itself, and my experience of the drug in 1896 and 1897 leads me to think that in certain jails its use as a prophylactic all the year round would prove beneficial.

Nearly half the prisoners of this jail had enlarged spleen on admission. I find this class of prisoners very liable to attacks of fever of the remittent type. Prisoners in whom the spleen is much enlarged on admission are generally sent direct to the convalescent gang. All the prisoners of this gang take a tonic mixture once a day all the year round. The mixture contains 3-gr. doses of sulphate of quinine. The tonic seems to agree with them, and their general aspect is healthy. But at the present moment I have two prisoners received from the convalescent gang in hospital suffering from remittent fever, and one suffering from pleurisy. All three had been taking three grains of quinine daily while in the convalescent gang. I have referred to cases of intermittent fever among prisoners of the ordinary gangs. Prisoners brought up before me for loss of weight often ascribe their condition to fever which they say comes on at night. Such prisoners are sent either to the convalescent gang or to the hospital.

* See Editorial in September issue, page 337.—ED., J. M. G.

Table I.

Months,	Influenza.			Dysentery.			Ague.			Remittent fever.			Dyspepsia.			Diarrhoea.		
	1897.	1898.	1899.	1897.	1898.	1899.	1897.	1898.	1899.	1897.	1898.	1899.	1897.	1898.	1899.	1897.	1898.	1899.
January	5	..	14	..	1	1	20	3	3	4	...	...	4	3	3	...	3	1
February	3	...	46	...	...	1	27	20	2	2	1	...	17	10	10	1	1	3
March	3	5	21	...	1	...	19	6	18	11	5	1	7	17	25	7	9	18
April	...	13	6	..	...	2	18	33	10	2	12	1	6	21	36	4	6	9
May	...	7	6	...	3	2	39	32	8	5	2	8	6	16	16	6	5	2
June	...	9	14	...	5	3	48	27	9	2	3	4	17	20	10	4	3	3
July	...	4	12	2	12	11	52	22	14	4	7	7	32	29	25	1	4	8
Total	11	38	122	2	22	20	223	143	64	30	30	21	89	116	125	23	31	44

Sulphate of cinchonidine was regularly administered as prophylactic throughout the year 1897, and up to the 12th August 1898.

Table II.

Months.	Influenza.			Dysentery.			Ague.			Remittent fever.			Dyspepsia.			Diarrhoea.		
	1896.	1897.	1898.	1896.	1897.	1898.	1896.	1897.	1898.	1896.	1897.	1898.	1896.	1897.	1898.	1896.	1897.	1898.
August	..	1	90	...	8	6	8	26	18	2	10	3	6	35	13	...	3	1
September	11	1	...	...	6	44	11	...	4	...	5	10	14	2	...	2
October	8	38	38	31	1	2	3	8	10	2	3	1	1
November	1	35	14	22	4	2	...	23	7	4	3	2	...
December	3	1	1	...	44	21	12	7	3	4	16	4	9	3	1	...
Total	104	2	9	15	131	113	94	14	21	10	58	66	42	11	7	4

THE CORONER IN THE MOFASSAL.

By J. H. TULL-WALSH,

MAJOR, I.M.S.,

Civil Surgeon, Berhampur.

THOUGH his work is not heralded by the time-honoured "oyez, oyez, oyez," and he has no intelligent jury to assist him, the Civil Surgeon is still in every respect the coroner of his district. Perhaps the most unpleasant part of his duties is that connected with the making of *post-mortem* examinations, and he may fairly ask that this work be made as light and as free from unpleasantness as is possible. There are certain difficulties with which we have to contend, and which remain, in spite of many attempts, on the part of individuals to get them removed or mitigated. It is on that account that I am writing this short article in the hope that publicity may

bring about unity of action, and that the medical department as such may insist on its recommendations being carried out.

The chief points which require notice are :—

(1) The time taken by bodies in transit to the place at which the *post-mortem* examination is to be made.

(2) The method of such transit.

(3) The means taken to delay decomposition or to mitigate its evils.

(4) Interference with the body and removal of clothes, ropes, weapons, &c., by the Police.

(5) The report sent to the Civil Surgeon should contain the date of death and *full particulars*.

(1) The greatest obstacle in the way of a satisfactory *post-mortem* is decomposition, both as hiding many things which should be seen, and as proving a nuisance and not unfrequently a source of danger to the examining officer. Decomposition comes on with great rapidity in

this country, and the worst time of year is during the moist hot intervals in the rainy season. It is evident, therefore, that where it is thought necessary to hold a *post-mortem* examination, the body should be despatched at once and should travel as quickly as possible. The following table was compiled from a series of observations by the late Dr. Coull Mackenzie with the maximum temperature at 87°F. in October and November 1883:—

		H.	M.
Lividity appeared in (average)	...	14	33
Green Coloration	...	26	4
Ova of Flies	...	25	57
Moving maggots	...	33	43
Vesications	...	49	34
Evolution of gases	...	18	0

In the hot weather and the rains the course of decomposition is much more rapid. This rapid destruction of the body is, however, often, very often, the result of carelessness on the part of the police. If bodies when found were placed in a cool and shady spot and protected from flies much less difficulty would arise.

(2) The methods of transit are by bullock cart or by bearers. A bullock cart with good bullocks should in such cases do three miles an hour, and any delay should render the police in charge of the corpse liable to punishment; not at the discretion of the District Superintendent of Police, but as a Government order. District Superintendents, even the best, do not appear to understand the necessity for speed in the conveyance of bodies for *post-mortem* examination, and I have even met with men who regard any remonstrances on these lines as a joke. If the District Superintendent of Police, and the Magistrate were ordered to attend every *post-mortem*, the Civil Surgeon would soon have little to complain of. I am of opinion that a bullock cart should do three miles an hour and bearers four miles. Opening my *post-mortem* register at a venture, I take the first fourteen cases for 1897:—

1. Distance from Berhampur not stated although the 'form' distinctly requires this information.
2. Distance not stated.
3. Distance not stated.
4. 5 miles.—12-5-97, 8 A.M.; 13-5-97, 9 A.M., or 25 hours to travel 5 miles.
5. 27 miles.—5-6-97, 12 M.; 6-6-97, 5 A.M., or 17 hours for 27 miles.
6. 8 miles.—25-7-97, 10, P.M.; 26-7-97, 7 A.M., or 9 hours for 8 miles.
- 7 to 13. Distance not stated or died in Hospital.
14. 32 miles.—6-10-97, 10 P.M.; 8-10-97, 8 A.M., or 34 hours for 32 miles.

Turning to another year there is no improvement as shown by the first seven cases for 1899:—

1. 8 miles.—15-2-99, 9 A.M.; 15-2-99, 2 P.M., or 5 hours for 8 miles.

2. 13 miles.—20-2-99, 3 P.M.; 21-2-99, 10 P.M., or 31 hours for 13 miles.
3. 24 miles.—24-2-99, 6 A.M.; 24-2-99, 6 P.M., 12 hours for 24 miles (the first respectable record).
4. 14 miles.—28-2-99, 2 P.M.; 1-3-99, 6 A.M., or 16 hours for 14 miles.
5. 18 miles.—14-3-99, time not given although required. 15-3-99, 5 A.M.
6. 7 miles.—16-3-99, 11 A.M.; 16-3-99, 6 P.M., 7 hours for 7 miles.
7. 13 miles.—24-3-99, 8 P.M.; 25-3-99, 6 A.M., 10 hours for 13 miles.

It is, in my opinion, scandalous that the police should be allowed to loaf along in this slack manner and to pay little or no attention to the information as to distance and time which they are supposed to enter accurately in the *post-mortem* form. Of course, there is no excuse for neglecting to make the fullest possible examination even when the body is much decomposed, but it must be evident that justice may be defeated by decomposition and delay. Another point upon which information should be given under this section is as to the date of death or disappearance of the deceased. This is seldom given although I have time after time called attention to the necessity for such information.

(3) As regards precautions which can be taken to check decomposition or mitigate its evils, even the simplest are generally neglected. It is quite easy to get a supply of long bamboo baskets for each *thannah*. Into one of these the body to be sent for examination could be placed surrounded by charcoal. The body should not touch the charcoal but should be covered by a clean cloth. By this means decomposition will be checked and evil odours mitigated. We shall not see, as frequently happens now, bloody and foul smelling fluid soaking through a mat and dripping on to the road as the cart or bearers pass along. It is only a few days since I received a serious complaint from a gentleman here who had to pass by a cart bringing a body in for examination.

(4) When a body is found hanging, strangled or stabbed, the police almost invariably remove the rope or weapon before bringing in the body. By all means let them cut down the hanging body and save life if possible; but if the person is dead the rope should be left *in situ*. Similarly, knives, &c., should not be removed from wounds, and weapons, &c., found lying near the body should be brought in the state in which they are found, not carefully cleaned as sometimes occurs!

Lastly, as regards the information given, it is generally of the most scanty description. The police are not required to enumerate the injuries, the examining officers will do that. What we want from them is full information as to the circumstances under which the body was found,

the appearance and nature of the surroundings and details of the deceased's movements just before his or her disappearance or death.

The next point to which I wish to call attention is the nature of the assistance which we obtain in the actual making of *post-mortem* examinations. There are times when a Civil Surgeon has to do important surgical work or is required to attend women in child-birth, and at such times it would be, in my opinion, criminal to touch a decomposing corpse. At head-quarters one of the Civil Hospital Assistants can be taught and made into a useful assistant, but there should also be a paid trained *dôme* attached to every *post-mortem* room. In my present station there is no *dôme*, and I employ a prisoner, but this is a very unsatisfactory state of things. Again, in how many *post-mortem* rooms are there any scales for the weighing of viscera? In reports submitted from subdivisions I frequently find that the liver is enlarged or it may be the spleen, but there is no way of judging how the enlarged organ compares with the normal. Only within the last year I have obtained scales for my *post-mortem* room. Hitherto we have been free from anxiety in connection with cases of poisoning. The Chemical Examiner's report has been in many cases a farce for all time, and it is hardly credible but true that although this matter was repeatedly noticed, the Government of Bengal in 1890 "decided that no change in the actual form was required!" The "actual form" merely stated that opium, or arsenic or atropine or other poison was present in the viscera submitted for examination. This report was perhaps good enough for cattle poisoning by arsenic, because cattle are not likely to eat arsenic for choice or by accident. For human beings the form was very unsatisfactory. There are opium eaters and even arsenic eaters in the world, and these poisons would be found in their viscera after death, but in small quantities. Yet upon such discovery, easily accounted for, a fellow creature might under the old form lose liberty or life. The Civil Surgeon is now to be the judge as to whether a quantitative analysis is necessary. Failing this, the Chemical Examiner is to be asked whether poison has been found in sufficient quantity to cause death (I.G.C.H. Bengal Circ. 78, of 1st December 1898). This after long years is the result of a remonstrance from the High Court. "In the case of *Empress versus Raja Mollick*, in which the accused *after having been convicted of having caused death by poisoning was acquitted by the High Court on appeal*, the Hon'ble Judges in their judgment, dated 25th April 1898, remarked that the report of the Chemical Examiner, which only stated that arsenic had been detected, was very limited in scope and of very small value."

A CASE OF PSEUDO-HYPERTROPHIC MUSCULAR PARALYSIS.

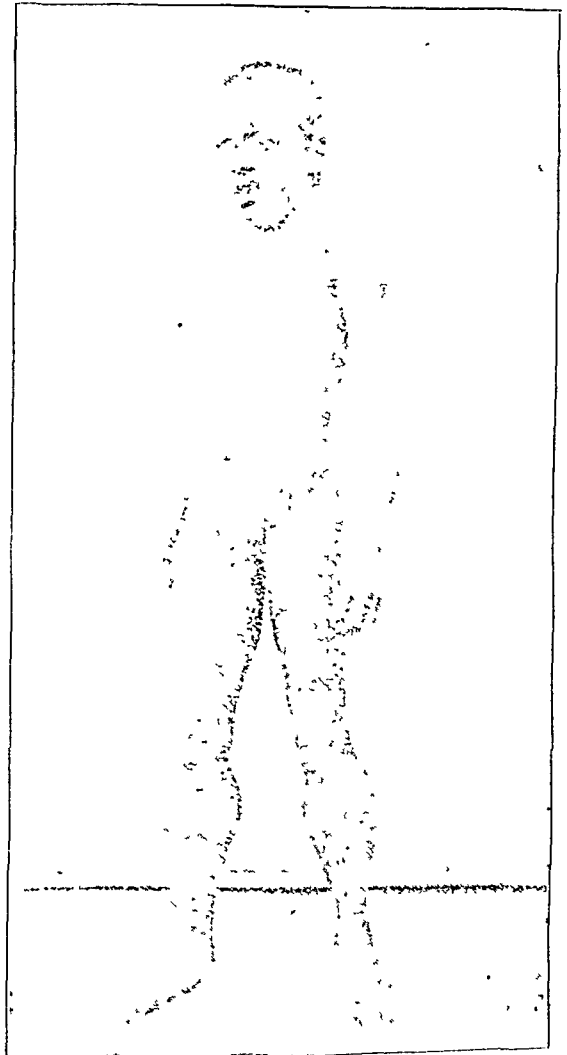
By R. H. MADDOX, M.B.,

CAPTAIN, I.M.S.,

Officiating Civil Surgeon, Saran.

A few notes with the accompanying photographs of this case may prove of interest.

C, Rajput, aged eight, son of a cultivator, was admitted to hospital on 3rd July 1899. His father, who brought him, said that about three years ago he noticed signs of weakness in the boy's lower limbs; the legs were unsteady, and the movements clumsy, and the boy frequently fell while walking. About two or three months later he noticed that the muscles of the calves and back of thighs were increasing in size.



This had gradually increased, with consequent difficulty in getting about, until admission to hospital.

Family History.—The patient is the eldest of three children, a sister aged six is alive and well, and one brother died a year ago of diarrhoea aged twelve months. The father is aged about thirty and is quite well, but complains of night blindness; he had unfortunately gone away before I had time to examine his eyes. The mother is aged about twenty-five. When the patient was three months old, his mother became insane, during which time she returned to her father, and the child, who did not go with her, was weaned. The husband cannot give details of the symptoms of his wife at this time, except that she became "pagal."



Condition on admission.—A fairly healthy looking boy; height, 4ft. 1in. The expression is stupid (this is exaggerated in the photograph by the bright light at the time); the mouth is kept open, and he has a vacant look, except when spoken to, when his face lights up and puts on an appearance of intelligence. His mental capacity is dull for his age, and he has a frequently occurring meaningless laugh. He can, however, answer simple questions correctly and fairly intelligently.

When standing he appears unsteady; the feet are placed widely apart with the heels slightly raised, and the weight of the body resting on the fore part of the feet. The body leans forward

with the abdomen projected forward owing to the exaggeration of the antero-posterior curve of the lumbar spine. He balances himself with his arms, and always endeavours to support himself by his hands. He is very easily pushed over when unsupported. He can stoop down, but cannot raise himself without using his hands on some external object, as a chair or bed; he cannot raise himself by pushing himself up with the hands applied to the legs and thighs.

The system generally is normal.

Nervous system.—Sensory functions appear normal; muscular sense seems unaffected.

Motor functions.—The organic reflexes are normal; patellar reflex cannot be elicited, and there is no ankle-clonus. The skin reflexes are present. There is no alteration of the surface temperature in any part of the body.

Voluntary Muscles.—There is enlargement and unnatural firmness of the following muscles, which is well shown in the photographs:—muscles of the calf on both sides, also of backs of thighs and gluteal regions. The deltoid on each side is markedly affected, also the supraspinatus and infra-spinatus. To a less degree, the muscles of the forearm and the abductors of the little finger on each side. There is wasting of the entire pectoralis major on each side; this being specially marked in the sterno-costal portions. There is also some wasting of the biceps, and triceps muscles on each side.

The enlarged muscles react to the interrupted current.

Progression is difficult. He walks with his legs separated, and the whole body is swayed from side to side with each step, only the ball of the foot and toes touching the ground at each step. He is able, however, to walk alone by himself all over the hospital building.

When sitting or lying down, he cannot raise himself to the erect posture without help; when lying on a bed and told to raise himself, he first turns right over on to his face and then gradually raises his shoulders, and by a sudden kind of push twists the body round and gets himself into a sitting posture; but from this he cannot stand up unaided. When one hand is pulled up for him, he gradually raises himself up by pressing with the other hand on his thigh; when sitting or lying, the thighs can only just slightly, and with great difficulty, be flexed on the abdomen. This appears to be greatly due to the increase in weight of the lower extremities.

He has improved slightly in the power of his limbs since admission to hospital, but I am doubtful if this improvement is more than might be accounted for by good dieting.

He has been treated by shampooing of the affected muscles and the application of the interrupted current, together with general tonic treatment and dieting.

TWO CASES OF PERITONITIS (ONE CAUSED BY TUBERCLE AND ONE BY ENTERIC FEVER) IN NATIVES OF INDIA.*

By ANDREW BUCHANAN, M.A., M.D.,
MAJOR, I.M.S.

Superintendent, Central Jail, Nagpur, Central Provinces.

DURING the past week I have made *post-mortems* on two cases in which the cause of death was peritonitis, and although these two in the nomenclature will come under quite different heads, it may be well to consider them together. In each of these the cause of the disease is a bacillus, and the bacilli from each you have seen under the microscope: the bacillus of tubercle in the one case and the bacillus of enteric in the other. Both these bacilli give rise to fever, but the fever in the case of the enteric is of fairly definite duration, while that of the other is extremely indefinite. And while the patient who is suffering from the one (enteric) shows marked dulness of the senses, it is curious that the patient suffering from the other often has his mental faculties unusually bright. Both are most liable to attack young people about the age of 20 to 25. In both there is great wasting of tissue.

TUBERCULAR PERITONITIS.

No. 5907, Bhimya, age 23, was admitted to jail in March 1898, in good health. His weight which was 112 lbs. on admission went up to 137 lbs. a year later, that is, in March of the present year, and then began to go down gradually. He was admitted to hospital on the 27th of May suffering from slight fever. His temperature went up to 100 or 101 daily in the afternoon, but for a few weeks there was no indication of the cause of this elevation of temperature. Then he was troubled frequently with vomiting, the vomited matter being of a green colour like a solution of sulphate of copper. About the middle of June a lump was felt in the abdomen. There was no pain. He retained food in his stomach but with difficulty. His weight then fell rapidly about 5 lbs. in each week until it was down to 80 lbs. He died on the 4th of August, so the duration from admission into hospital was about 10 weeks.

Post-mortem.—The stomach and intestines are matted together within the thickened peritoneum which contains innumerable small masses of tubercular matter in a cheesy state. Some of these small masses are as large as pea. Microscopical examination of these masses shows many tubercle bacilli. There is a slight deposit of tubercle in the lung. (It had not been

detected during life and the patient had not complained of any lung symptoms.)

NOTE.—This is the first case of tubercular peritonitis which I have seen in a Native. I had seen one case of acute tuberculosis in a Native in 1895, and in that case curiously the man's weight had increased 18 lbs. between the time of his admission to the jail and the commencement of the illness. During the illness he lost flesh rapidly.

ENTERIC FEVER WITH PERFORATION.

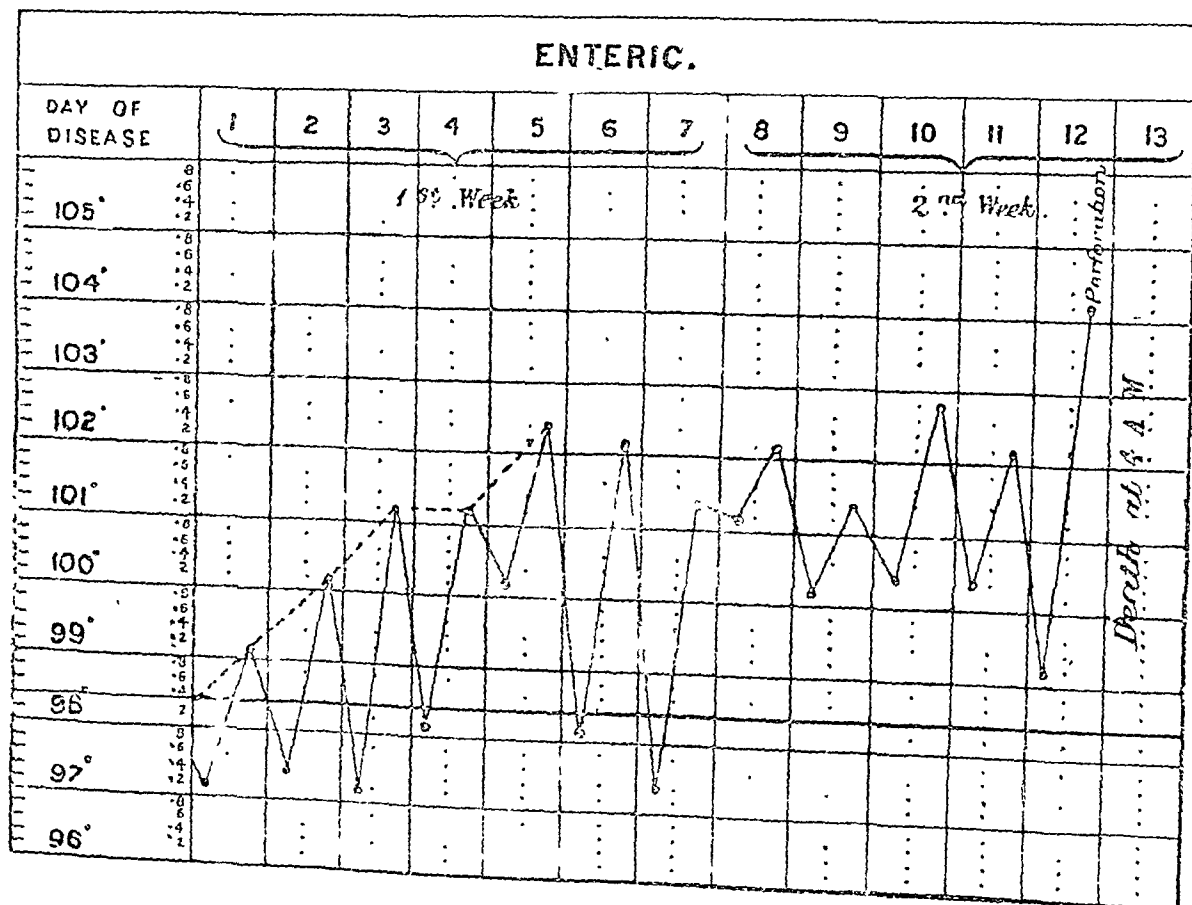
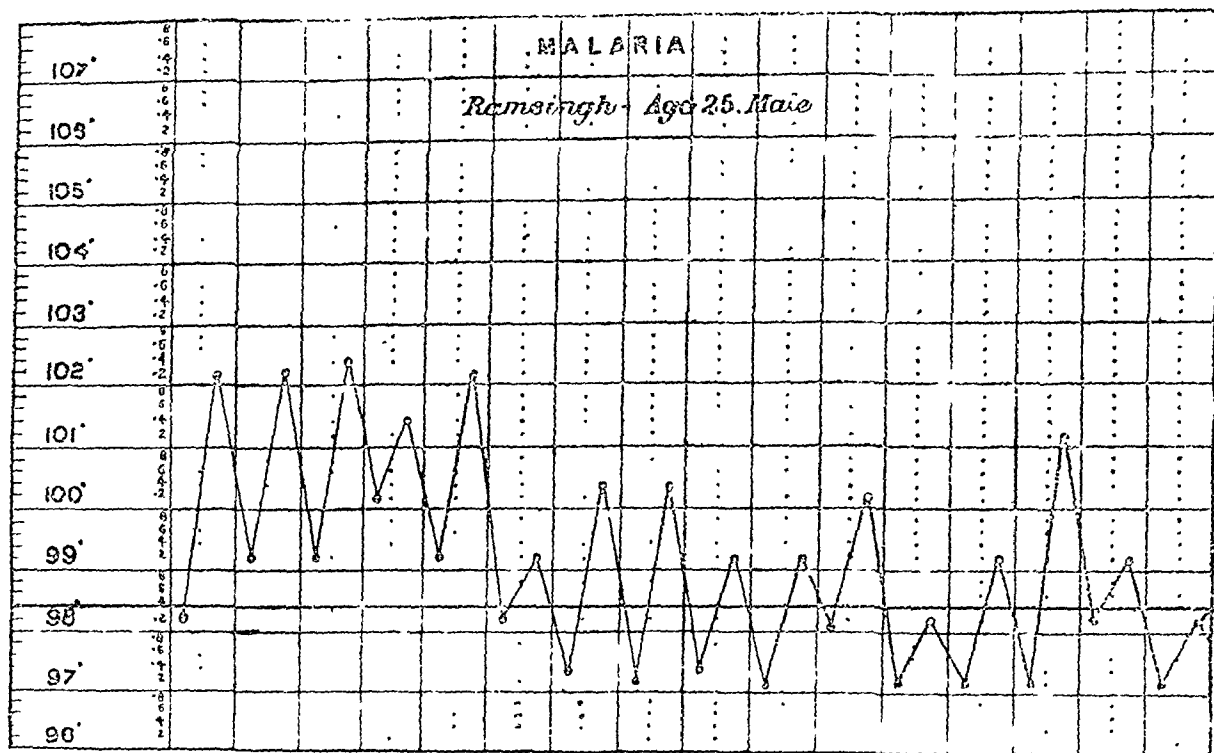
The other case of peritonitis was caused by perforation of the intestine in enteric fever. In 1896 I read before this Society the notes of 10 cases of enteric fever, which had occurred in Natives in the Nagpur Jail. Since that time two or three cases have been seen every year. I mentioned then that many medical men who have been for over 20 years in India were still doubtful as to the occurrence of enteric in Natives, but as several of the cases were verified by *post-mortem* examination, all possibility of doubt was removed. This patient had been in hospital for 16 days before the commencement of the enteric, and as his temperature was being taken daily, the early gradual rise of temperature in the first few days is well seen in the evening temperatures—99, 100, 101, 101, 102. The morning temperatures for the first few days fall to or below the normal, and this peculiarity I have noticed in several cases.

In the second week, as in Europeans, there is not much difference between the morning and evening temperatures.

The symptoms in this case were not at first at all well marked, and it was not till the tenth day of the disease that a diagnosis of enteric was made, though the temperature gave rise to a suspicion much earlier. On the tenth day there was gurgling in the right iliac fossa, slight looseness of the bowels, but the stools were not characteristic, the spleen was enlarged, but it had been already enlarged before the enteric began, the tongue was coated, but it had not the characteristic yellow coating which is so often found. There was, however, very marked deafness, and there was a slight cough. There is perhaps no sign so reliable in these cases as the deafness, provided that deafness from quinine or obstruction is excluded as a cause. There was some delirium at night and some muscular tremor, and these, coming on about the tenth day, when taken with the temperature, the deafness, the gurgling in the right iliac fossa, looseness of the bowels and the slight cough, left no doubt as to the diagnosis. On the twelfth day the usual signs of perforation occurred—pain in and distension of the abdomen, legs drawn-up, rapid rise of temperature, very rapid wiry pulse, and vomiting. Death occurred in the usual time, that is, in about 24 hours.

* Paper read at the Nagpur Clinical Society, August 1899.

TWO CASES OF PERITONITIS (ONE CAUSED BY TUBERCLE AND ONE BY ENTERIC FEVER) IN NATIVES OF INDIA.



At the *post-mortem* examination the characteristic lesions of enteric were found.

The peritoneum was red and inflamed, and the coils of intestine were beginning to be adherent to each other. In the lower part of the ileum there were four ulcerated Peyer's patches. The patch nearest the ileo-cæcal valve has two ulcers $\frac{1}{2}$ inch by $\frac{1}{3}$ of an inch. The patch about 6 inches above the valve has a perforation $\frac{1}{4}$ inch in diameter. A foot above this in another patch there is an oval ulcer, the longest diameter being transverse to the bowel. Taylor points out that a "typhoid ulcer is frequently transverse to the bowel," and the reason of this is that very often the whole Peyer's patch is not ulcerated. In the centre of the ulcer is a yellow slough. There is one small ulcer on another patch, and another patch shows a small bit which has become altered in colour as if it were about to slough.

In the large intestine, not far from the ileo-cæcal valve, there is one small ulcer with raised and deeply injected edges.

Bacteriology.—A cultivation was made from the spleen after taking the usual precautions in regard to sterilisation, and a motile bacillus was found. On mixing with a drop of blood from a man who had enteric fever before the bacilli collected together (Widal's reaction) into clumps.

Since writing the above the Editor of the *Indian Medical Gazette* has asked me to give an account of the cases of enteric fever which I have seen in Natives: I propose to do this for a later issue of this journal.

A Mirror of Hospital Practice.

A CASE OF CÆSAREAN SECTION DURING LABOUR FOR OBSTRUCTION TO DELIVERY DUE TO CANCER OF THE CERVIX.

BY HUBERT M. EARLE,

CAPTAIN, I.M.S.

Resident Surgeon, Eden Hospital, Calcutta.

HOBILA, a Bengali woman, aged forty-two, was admitted into hospital in labour in a very weak general condition. She stated she had been losing blood from the vagina for a long time.

The cervix was found to be occupied by a mass of epithelioma which involved the surrounding tissues to a considerable extent, thus fixing it and blocking the parturient canal so as to render delivery of a living child *per vias naturales* an impossibility. As the child was ascertained to be alive, Cæsarean section was decided upon.

The abdomen was opened by an incision in the median line reaching from a point opposite the fundus of the uterus, which was situated half-way between the umbilicus and the ensiform cartilage down to within three inches of the pubes. The abdominal walls being held firmly in contact with the uterine walls to prevent blood escaping into the abdominal cavity, the uterus was opened by a central incision reaching from the fundus downwards nearly as far as the lower end of the abdominal incision. This exposed the placenta which was attached to the anterior wall of the uterus. Placenta and membranes were rapidly removed, and the child seized by a leg and extracted. The resistance offered by the gripping of the head by the retraction ring was fairly easily overcome.

The child was taken away, and it being in a condition of *asphyxia livida* immediate active measures were employed for its resuscitation.

A hypodermic injection of ergotine was now administered to the patient. A large flat sponge was then placed over the abdominal contents behind the uterus, and the latter lifted out of the wound wrapped in a cloth wrung out of warm antiseptic lotion, and bleeding stopped by an elastic ligature applied to the lower uterine segment.

Severe hæmorrhage occurred during the short period of incision into and extraction of the contents of the uterus.

Silk sutures were now applied as rapidly as possible to the uterine wound, deep ones passing through peritoneum and muscle, but not reaching the mucous membrane, at intervals of half an inch, and deep ones situated between the former.

The edges of the peritoneal coat were turned in and good coaptation of the serous surfaces procured.

The uterus was squeezed in a warm antiseptic cloth, and replaced in the abdomen in a well contracted state.

The woman was sterilised by removing a portion of Fallopian tube on each side. This was done by transfixing the broad ligament just below the middle of the tube, tying the latter and then pinching up a loop of it and tying this with the ends of the first ligature and then cutting off the loop of tube.

No sponging of the abdominal cavity was necessary as no blood had been allowed to enter it.

The abdominal wound was now closed with silkworm gut sutures, and the wound dressed in the usual way, a firm pad being placed over the uterus.

		lbs. oz.
Weight of child	...	5 4
" " placenta	...	1 0
Length of child	...	18 inches,
" " Funis	...	20 "

On account of the weak general condition of the patient ether was given instead of chloroform during the operation.

The pulse was almost imperceptible at the termination of the operation, and prior to removing her from the table three pints of saline solution were injected into the cellular tissue, a hypodermic injection of strychnine and ether given, brandy and hot-water injected per rectum and auto-transfusion employed.

For the first two days after the operation, the patient remained in a very collapsed state with an almost imperceptible pulse and subnormal temperature, but by means of warmth, auto-transfusion, numerous intracellular saline and ether injections and administration of stimulants, concentrated soups and whey, she finally gradually revived, and by the third day her pulse, though still extremely feeble and rapid, could be clearly felt, and the temperature rose to 99° F.

She was unable to retain nutrient enemata, so that all nourishment had to be administered by the mouth. Fortunately this caused no vomiting. Her temperature now gradually rose, and the next day reached 104.6° F. A turpentine enema administered at this time brought away a large amount of very offensive dark-coloured faecal matter and much flatus. This immediately relieved the bad symptoms present, and her temperature rapidly fell to 101° F.

Sulphate of magnesia was given three times and an enema once daily for the next three days, after which time natural action of the bowels took place.

The temperature remained now at about 102° F., and it was at this time found that an abscess had developed in each breast. After incision and drainage her temperature fell to 99° F., and the pulse which had hitherto maintained the rate of from 140 to 160 beats per minute fell to 120.

On the eighth day the stitches were removed from the abdominal wound which had united perfectly. There was never a sign of anything wrong in connection with the uterine or abdominal wound.

A few clots came away *per vaginam* on the third day which were non-offensive in character. Beyond this there was no discharge either lochial or from the cancer, until three weeks after the operation when the cancerous discharge reappeared.

The measures adopted for the resuscitation of the child were successful; and it appeared to be doing well at first, but on the third day it began to waste away rapidly and died on the fourth day from marasmus.

Remarks.—The chief points about this case are the weak state of the patient prior to operation, and the extreme and persistent collapse following it, from which she finally rallied.

The benefit of intra-cellular saline injections is also apparent. It will be seen too that the administration of considerable quantities of nourishment by the mouth (necessitated in this case by the collapse and inability of the rectum to retain nutrient enemata) after opening the peritoneal cavity, is not incompatible with recovery.

No attempt was made to remove the uterus, as the disease, which involved the surrounding tissues to a very considerable extent, could not possibly have been completely extirpated.

I am indebted to Lt.-Col. Joubert, I. M. S., for permission to publish this case.

A CASE OF CHOLECYSTOTOMY.

By ANNA L. CHURCH, M.D.,

Victoria Dufferin Hospital, Calcutta.

A MAHOMEDAN *purdah-nashin* woman, aged 30, was admitted to the Lady Dufferin Victoria Hospital, Calcutta, on 29th March 1899, for a sudden severe attack of pain in the right hypochondrium accompanied by vomiting. The bowels had not moved for two days. On examination a somewhat movable rounded tumour, of about the size of an egg, could be felt below the right costal arch. One hand pressing upwards from the loin, while the abdominal wall was depressed by the other hand, could also feel it. The diagnosis seemed to lie between movable kidney and distended gall-bladder due to cholelithiasis. There was no jaundice and no history of a previous similar attack. The temperature was normal.

On being received into the ward an enema was given, and a stool consisting of hard lumps followed. *Mist. alba* was afterwards given, which produced one or two free stools.

The patient was watched for several days. The pain and vomiting ceased after the day of admission, but there was acute tenderness in the right hypochondrium. The tumour appeared larger, fixed and more diffused; the temperature remained normal; the diagnosis appeared to be distended gall-bladder (probably empyema) with surrounding local peritonitis and probably gall stones in the bladder or cystic duct. Operation was advised.

On April 3rd, the tenderness was gone and the tumour felt rather like the liver. On April 4th I operated, making a vertical incision over the most prominent part of the tumour. On opening the peritoneal cavity some recent adhesions were found, and the more prominent part of the tumour proved to be liver with the gall-bladder exposed in the lower part of the wound. The incision was extended downwards to expose the gall-bladder more thoroughly, which was then found to be moderately enlarged, whitish in

colour and firm to the touch. It was packed carefully round with gauze sterilised by boiling. A viscid slightly greenish mucus dropped slowly into the aspirator bottle. The needle was then removed and the bladder freely incised. A considerable quantity of mucus, becoming brownish as it flowed, escaped. The finger was then introduced, and a stone felt up at the neck of the bladder. Long straight forceps failed to catch it, but removed several flakes of soft membranous material. Lawson Tait's fenestrated alligator forceps were then introduced which grasped the stone at once and withdrew it. The finger re-introduced felt a second stone further up, which was also grasped without trouble by the alligator forceps and removed. No other stone was felt as far as the finger could reach, and the alligator forceps were introduced to sound further up, but nothing was felt. Just then the patient retched suddenly, and the forceps were hastily withdrawn. The episode was alarming, as it was feared the patient might have driven the forceps through her dilated cystic duct; however, on examination, no damage was detected. The incision in the gall-bladder was then stitched to the peritoneum, and fascia of the abdominal wall and the abdominal wound closed above and below, and a rubber drainage tube put into the bladder. The walls of the bladder were much thickened with chronic inflammation. The wound was dressed with sterilised gauze and sublimate wood-wool.

The patient did well after the operation with the exception of an attack of pleurisy on the right side on the fifth day, which subsided after a few days. Slight dulness and feeble breath sounds persisted behind at the angle of the scapula for some time, and an exploratory needle was inserted in two places, but with negative results.

The patient was kept on her right side for a few days after operation to promote the flow of bile away from the wound. The wound was dressed twice daily with gauze wrung out of 1 in 2,000 sublimate lotion and wood-wool. There was a free flow of bile which stained the dressings bright green. There was also a free flow of bile into the intestine as evidenced by the colour of the stool. The tube was kept in for a week for the sake of draining the chronically inflamed bladder. After its removal bile continued to flow for another fortnight and then the fistula closed. There were no adverse abdominal symptoms throughout. The patient was discharged well on 9th May.

The stones removed were each about the size of a large hazel-nut.

Cholelithiasis is said to be nearly five times as common in women as in men. It may be diagnosed, to quote Greig Smith, by "recurrent attacks of hepatic colic, with or without enlargement of the gall-bladder, and not necessarily

accompanied by jaundice... Paroxysmal attacks of pain in the epigastric and right hypochondriac regions, radiating towards the back and shoulders, often preceded by a rigor, frequently accompanied by vomiting, and always attended by profound constitutional disturbance, suggest the passage of gall stone. The paroxysms, increasing in severity, may pass off suddenly in a few hours: rarely do they last more than one or two days. The liver is usually enlarged during the attack, and occasionally it is possible to detect a distended gall-bladder. If jaundice is present, we may infer that there is occlusion of the common or the hepatic duct."

Some of the principal indications for operation in cholelithiasis as given by Mayo Robson are:—

- (1) Frequently recurring biliary colic without jaundice, with or without enlargement of the gall-bladder.
- (2) Enlargement of the gall-bladder without jaundice, even if unaccompanied by great pain.
- (3) Persistent jaundice ushered in by pain, and when recurring, pains with or without ague-like paroxysms, render it probable that the cause is gall stones in the common duct.
- (4) Empyema of the gall-bladder.
- (5) Peritonitis starting in the right hypochondrium.

In Mayo Robson's early cases of cholecystotomy he stitched the wound in the gall-bladder to the skin and had several resulting persistent biliary fistulæ. He then adopted the plan of stitching the gall-bladder to the peritoneum and fascia only, thus leaving a deep raw surface below the level of the skin to granulate up, and he ceased to be troubled with fistulæ except in cases where the ducts had not been cleared, and in such cases such a safety value is rather an advantage than otherwise.

In some cases the gall-bladder is shrunken, and cannot be brought up to the abdominal wall.

The parietal peritoneum should then be drawn down, if possible, to meet it, or the right border of the great omentum may be utilised to form a peritoneal tube shutting off the drainage tube from the general cavity. Packing the tube round with iodoform gauze is also a safe means of occluding the peritoneal cavity.

The so-called "ideal" method of closing the wound in the gall-bladder and returning the viscus without securing it to the abdominal wall has not met with general acceptance among surgeons. Greig Smith remarks that it is not ideal in the sense of saving life; that the walls of the gall-bladder when healthy are too thin to be satisfactorily sutured, and when thick they are inflamed, and cannot be trusted to heal kindly. Moreover in inflamed cases drainage is good treatment.

DIPTEROUS LARVÆ IN THE HUMAN ALIMENTARY CANAL.

By JOHN SMYTH, M.D.,

MAJOR, I.M.S.,

Durbar Physician, Mysore.

THESE cases are sufficiently rare, I think, to merit report with a view to inviting the experiences of others in regard to them. Medical literature, so far as it is within my reach, or within the reach of medical friends, makes no reference to such phenomena. The occurrence of dipterous larvæ in man is *hinted* at (nothing more) under the heading, diptera, in the *Encyclopædia Britannica*. I had expected to find a reference to the subject in Vol. II of Allbutt's *System of Medicine*, but have been disappointed.

My experience includes two cases, and both within the last three months.

CASE I.—An Indian gentleman, *æt.* 45, of spare lean figure, consulted me at Ootacamund, in May last, in regard to his progressive emaciation, having lost 25lb in the past year. I found on physical examination that the viscera were normal in size, and the functions generally fairly well discharged; but the tongue was thick and flabby, the urine of low specific gravity (1004, in the morning), and there were pains of an indefinite character in the abdomen. He had taken gallons (I think he said) of cod-liver oil with no result. I told him I believed he had worms.

I prescribed repeated doses of santonin, thereafter iron and quinine, &c.

He wrote to me in June, when I was in Mysore, and sent me three bottles containing "worms." They were clearly larvæ, and all of the same kind, but of different ages; one lot had been gathered *immediately* from the motion, another 12 hours after it was passed, another after 24 hours.

The older ones were the larger. The youngest lot were about $\frac{1}{8}$ inch in length and $\frac{1}{16}$ inch in thickness; the oldest were $\frac{1}{2}$ inch in length and about $\frac{3}{16}$ inch in thickness; all were torpedo shaped, the small end being the head. They were of course dead, being preserved in spirits. They were segmented, like any ordinary maggot, and from the head protruded two very strong dark brown hooks, exactly like the claws of a tiger (in miniature). The rest of the body was too opaque to make out anything definite as to the interior.

A few days after the receipt of these grubs, I examined living grubs from a spoilt mango. They resembled those sent by the patient in all respects; but in the living specimens the

head, with its formidable hooks, was seen to be retractile into a sheath and to present two minute conical protuberances where one might expect the eyes to be situated. The muscular arrangements whereby the hooks were moved were clearly seen. These larvæ were very tenacious of life, five minutes in each of the following media having no perceptible fatal effect: methylated spirit, saturated solution of alum and acetate of lead, 10% solution of cocaine, pure carbolic acid, brandy; but half an hour in brandy stilled them sufficiently to enable them to be examined by the microscope. Their saltatory powers were prodigious. One of them jumped from the microscope slide, where it was immersed in pure carbolic acid to a distance of a yard on to the floor.

CASE II.—This was a student of the Central College, Bangalore, who consulted me on the 27th July. He said he was passing worms for over a year—worms of a description that made him feel sure he was "rotten."

He brought me three specimens. They resembled the mango maggot in all details, except that they had only one cephalic hook, of an extremely powerful description. The patient had been passing fifty to a hundred of these daily for the last twelve months and more; during which period, however, a couple of weeks or so would now and again elapse without the appearance of any "worm." He noticed sometimes clusters of ova in the motion. He examined these ova by bursting them between two firm objects. They exploded with a quite audible "crack."

The history of this case includes a habit this lad has of eating mango leaves whenever he can get the chance. But mangoes themselves he has not eaten this year. He lives here during the college session, but goes to his native place, Vizagapatam, during the recesses.

Such are the two cases as I have observed them. The patients suffered from no rectal abscesses or other local trouble that might serve as a home for maggots.

As to treatment, the first patient has been using turpentine enemata, and for the present passes no more larvæ. The second patient is taking *Butea frondosa* seeds, but for too short a period as yet to enable me to say if he has completely got rid of his pests.*

* I have just received a letter from Professor Henderson, Christian College, Madras, to whom my first patient sent some of the larvæ for examination. Professor Henderson dwells on the difficulty of identifying these larvæ while the parent is still unknown, and on the difficulty of investigating the subject in India. He hazards the opinion that the larvæ now in question belong to the *Cestridæ*, and says he would not be surprised if they proved to be a species not previously known in man.

THE
Indian Medical Gazette.

OCTOBER, 1899.

THE BRITISH MEDICAL ASSOCIATION
MEETING AT PORTSMOUTH.

THE Medical Services of Her Majesty's Army and Navy had no reason to feel themselves neglected at the recent meeting of the British Medical Association at Portsmouth. It was natural that they should figure conspicuously at a meeting held at a great naval station like Portsmouth, and within easy reach of the Army Medical School at Netley. We can only at present refer to a few of the subjects of interest which were discussed at the Annual Meeting. The visual tests regulating the admission of all ranks to the services, the vital question of the prevention and efficient treatment of syphilis in the army were fully discussed, and we hope with advantage. It is not, however, our present intention to refer to these matters now. We propose to confine ourselves to a brief consideration of what may be called the two controversial addresses of the Meeting, *viz.*, that of Professor Ogston in the surgery section and that of Dr. G. Thin in the section for tropical diseases.

After a few preliminary remarks on the new day in surgery, and the effects of Lister's discoveries, Professor Ogston proceeded to consider how far the Medical Services of the British Army and Navy were in a condition to keep themselves abreast with the highest developments of surgery. "It is moderate and reasonable to expect," he said, "that the Medical Departments of the Army and Navy shall be in a condition commanding the respect and approval of the medical profession and the public, that the officers shall be at least as favourably placed in regard to their work as their civil brethren, and that both afloat and ashore they shall be able to efficiently perform their functions in time of peace and be fully prepared for the eventualities of war." Professor Ogston went on to say that of recent years the Army Medical Service had fallen in the estimation of graduates of the medical schools; the most talented graduates have ceased to aspire to

enter it, and it has come to pass that few men, and those of inferior qualifications, aspire to enter the service. Senior men, he said, how ever much loyalty seals their lips, show themselves disappointed and discouraged with the life they have to lead. Attendance on minor ailments, trifling complaints, and the few serious diseases and injuries occurring among bodies of men in the prime of life constitute the whole ordinary work of the immense majority of the medical officers serving in the Army. "They afford to the Army or Navy Surgeon, it is no exaggeration to say, scarcely any chance of acquiring the knowledge and skill that would be demanded of him in war." "Under the existing system," the critical Professor goes on to say, "no junior officer of the Royal Army Medical Corps has any opportunity of practising modern surgery; even if occasion offer, he is tied down by restrictions and impediments enforced by his seniors, and his natural desire to prepare himself for the highest work is disregarded and repressed. So long as the conditions of the service entail an intellectual sterility, so long will our best graduates recoil from such a life."

Professor Ogston then proceeded to point out that these remarks do not apply to the Indian Medical Service, where the opportunities of professional work are abundant, and where two-thirds of its officers are in civil employ, the conditions of service thereby approximating those of the Continental armies, which Professor Ogston held out as models for imitation. "The natural result is," said Professor Ogston, "that the Indian Medical Service continues to attract the best graduates of the Medical Schools."

There is no doubt that, apart from a certain strain of pessimism and exaggeration, there is a strong substratum of truth in the above remarks of Professor Ogston, but as Surgeon-General Harvey, in proposing the vote of thanks, pointed out, things are not quite so bad in the Royal Army Medical Corps as Professor Ogston maintained. The recent experiences on the North-West Frontier showed that the Corps contained a large number of skilled surgeons possessed of surgical qualities, which any civil hospital might be proud of, and, we may add that the still more recent experience on the battlefield of Omdurman showed exactly similar results, and results as regards the aseptic treatment of wounds which could not be surpassed

by any band of surgeons imported from the best metropolitan hospitals.

Nevertheless, no one will gainsay the general application of Professor Ogston's remarks, more especially with regard to men in the Army Medical Service at home stations. It is different in India. The want of variety in professional work, the purely military system of seniority, the want of independence, the restriction of all practice to the ills of men in the prime of life and chosen for their health and strength, undoubtedly are real entities, which do not make for professional skill and knowledge. It is beyond a doubt that it is the infinite variety, the early independence, the early granting of great responsibilities and the vast opportunities for medical and surgical work, which (as Professor Ogston says) make the Indian Medical Service popular, and attract to it the best men from the schools. That it does continue to so attract, and that the Indian Medical Service is (as Surgeon-General Harvey said) "as good as ever it was" can be proved by anyone who cares to look at the qualifications, and previous experiences of the men who have entered that Service—say within the past dozen years, the period of Army Medical agitation. As long as a service attracts men who are Fellows of the Royal Colleges of Surgeons, who have been house surgeons and house physicians—as the Indian Medical Service now attracts them—no fear of its decadence need be entertained.

The most striking feature however in Professor Ogston's address is that the very training which he pleads for as necessary to the efficiency of the Royal Army Medical Corps and the Medical Department of the Royal Navy is *exactly what is provided by the civil side of the Indian Medical Service*. The civil branch in fact forms the best reserve of Army Surgeons that it is possible to imagine. Here we have a body of men placed often at an early point of their career in medical and sanitary charge of large districts, accustomed to rely on themselves in every emergency and (what Professor Ogston wants) daily accustomed to every variety of surgical work, emergency or otherwise. Proof of this statement is scarcely needed; if it is we commend the doubter to consult the pages of this Gazette. Even in the past few months what will be found? Numerous cases of abdominal section, hysterectomies, ruptured tubal

gestation, several ovariectomies, compound fractures of the skull, operations for cerebellar abscess, for liver abscess, gunshot wounds of the head, radical cures for hernia and for hydrocele, operation for intestinal obstruction, compound comminuted fractures, enterectomy, enteroraphy, and Cæsarean section. These be it remembered are only the few cases reported in our columns. If any one wants to learn the real surgical strength of the Indian Medical Service reserve, and what a field for surgery the civil branch of the Service provides, he has only to consult any of the Provincial Annual Hospital Reports. We pick up the last Punjab Report, which lies before us. What do we find (page 7)? One officer heads the list with 547 major operations in one year, these include 25 tumours, 35 operations on bone, 65 operations for stone (cutting and crushing), 11 amputations and no less than 406 cataract extractions. Another officer has 379 operations to his credit. These are figures which any London Surgeon might be justly proud of, and they are by no means exceptional among Civil Surgeons in India.

In the face of all this it is extraordinary to hear some persons talk as if there were too many men in civil employ. Why Professor Ogston's speech is the best defence of the present system in the Indian Medical Service that has ever been made. Here we have in practical and successful working order the very scheme which Professor Ogston has advocated for the professional redemption of the Royal Army Medical Corps. We feel convinced that the Government of India recognises this and will never do anything to disturb such a satisfactory state of affairs—never as long as it may be necessary to keep the Army of India in a state of preparedness to meet a European enemy in the field. Moreover, the members of this reserve of surgeons in civil employ have all passed through the necessary preliminary training in military methods, without a knowledge of which medical men, newly imported from civil life, are more or less useless—a fact which has been abundantly proved by the troubles and mistakes of the hastily collected volunteer surgeons in the recent Spanish-American War. We commend these facts and Professor Ogston's recommendations to those superficial reformers who, for reasons not difficult to understand, advocate the separation of the Civil and Military

Branches of the Indian Medical Service, a separation which we firmly believe would lead to the deterioration of both branches.*

So much for this part of our subject. We have left too little space to deal properly with Dr. Thin's extremely interesting address. We must, therefore, for the present pass over his valuable resumé of the present state of the mosquito-malarial theory, and come to the controversial portion of his address. He had little difficulty in demonstrating the very great advantages which the large hospital and medical school at Netley has over any other possible institution in Europe for the teaching of tropical diseases. With the single exception of beriberi every important tropical disease is to be seen in far greater numbers at Netley than in any other hospital in the United Kingdom. This we may add is exactly what more than a year ago we advocated in these columns. But though the facts do not admit of dispute yet the discussion could have little more than an academic interest. The London School of Tropical Medicine is an accomplished fact, and will be in working order by the time these words are in print. For reasons obvious to all who have followed the subject in the medical press, it was clear from the very commencement that the supporters of the London Scheme would never consent to anything but a school of their own. This we think is to be regretted, and we can only hope that the London School, in the hands of the able staff now in charge of it, will fulfil all the hopes of its supporters. The Liverpool School of Tropical Medicine has also started under good auspices, and will be able to command a supply of tropical cases inferior only to Netley. For the investigation of diseases peculiar to Africa the Liverpool School has unique opportunities.

We have, however, always maintained that even after a course of teaching at Netley, Liverpool or London, the young practitioner newly arrived in the tropics will still have much to learn, and a few months' experience at one of the big hospitals at any of the Presidency Towns in India or any other Colonial capital town,

would teach him more than twice as long a course at any tropical school in England, no matter how well endowed or how brilliant the staff may be.

INSANITY IN INDIA.

THE following tables compiled from the reports upon the Lunatic Asylums of Bengal, Madras and the Punjab, show the relative numbers of lunatics in the asylums at the end of the year 1898 :—

	Bengal.	Madras.	Punjab.
Idiocy	25	33	34
Mania—			
(a) Epileptic	39	43	33
(b) Other forms	626	453	335
Melancholia—			
(a) Epileptic	4	.....	.....
(b) Other forms	167	43	82
Dementia—			
(a) Epileptic	3	1	4
(b) Other forms	126	124	24
Mental Stupor	2	.....	5
General Paralysis .. ..	.....	2	1
Delusional Insanity	33	14	7
Not yet diagnosed or recovered	58	1	13
Total treated	1,083	714	558

From this table it will be seen that in all three provinces the vast majority of lunatics suffer from acute or chronic mania. Idiocy is apparently least found in Bengal asylums and most in the Punjab. The proportion of insanity due to epilepsy is somewhat greater in Madras and Punjab than in Bengal. Forms of dementia appear much less common in the Punjab. General paralysis of the insane* was unknown in Bengal during the year and has only two cases in Madras and one in the Punjab. Melancholia was about equal in Bengal and Punjab, but it was much less common in the Madras institutions.

The following table gives as nearly as possible the recorded causes of the insanities; unfortu-

* [The absence of general paralysis of the insane cases from Indian asylums is very interesting. It is however in accordance with experience. Savage writes (Allbutt's System, Vol. VII, p. 693), general paralysis "is rare among vegetable feeders, such as certain Oriental races, though these may give way to excessive sexual indulgence. I understand that certain nomadic tribes, though saturated with syphilis, not being addicted to meat nor alcohol do not get general paralysis. . . . The disease is associated with highly civilised states, and most common among men who live in cities and do brain work." Diabetes in some respects takes the place of general paralysis among educated city-dwelling natives of India.—Ed., J. M. G.]

* [We propose in a future issue to consider a scheme for admitting medical men in military employ to a share in the surgical and medical practice of the large civil hospitals which exist in many stations in India.—Ed., J. M. G.]

nately the Madras report goes less into detail in this matter than the other two reports:—

Alleged causes of insanity among the total treated.

Cause.	Punjab.	Madras.	Bengal.
Charas ...	26	..	.....
Ganja ...	5	57	157
Bang ...	11	5	1
Opium smoking ...	.....	1	1
„ eating ...	1	3	7
Alcohol ...	10	10	33
Other intoxicants ...	.....	2	8
Fever ...	6	8	18
Heat ...	7	.....	2
Poverty ...	.....	.....	1
Congenital ...	7	.....	5
Epilepsy ...	23	.....	30
Over study ...	3	.....	.....
Child-birth ...	3	.....	3
Excessive venery ..	1	.....	.....
Non-appearance of menses	.....	.....	1
Heredity ..	1	.....	72
Masturbation ...	.....	.....	1
Injury ...	.....	.....	2
Grief ...	8	.....	.....
Illness (?) ...	.....	.....	6
Syphilis ...	.....	.....	1
Senility ...	.....	.....	1
Acute disease ...	.....	.....	3
Excess dose of quinine	.....	.....	1
Other causes ...	.....	.....	12

As regards Bengal, Colonel T. H. Hendley, C.I.E. writes: "Of the 159 admissions three were due to alcohol, and 21 were attributed to ganja smoking." In Dacca Asylum Lieutenant-Colonel Macrae, after careful inquiry, could only attribute two cases to ganja. In Patna Major Whitwell only reported ganja as the cause in clearly proved cases. Major Tull-Walsh believes that the mental aberration produced by the abuse of hemp drugs is generally of short duration, and the patient ultimately recovers. The Madras report makes little comment upon the tabulated causes of admission. The Punjab report merely remarks that the large number of cases admitted into the Lahore Asylum, due to alcohol drinking, is remarkable.

The general health of the Bengal lunatics was very good, in fact, the best on record for the last 13 years (except 1890), and compares favourably, says Colonel Hendley, with the death-rate of county asylums in England. At Dullunda (Calcutta) Asylum, the number of sick was much less than in previous years, which Colonel Hendley attributes to improved sanitation, the issue of quinine prophylactics and to the institution of an "infirm gang," which facilitates the easy recognition

and care of those losing health, and affords a means of keeping the weakly and aged under closer observation. The patients are regularly weighed, as are prisoners in jails, and Dr. Macrae, at Dacca, says this tends to prevent actual disease arising, for any one losing weight is at once brought under observation. Major Whitwell, at Patna, was able to report an improvement in dysentery, which used to be so common in that ill-constructed asylum. The dry-earth system is thoroughly carried out, and the issue of warm padded coats to old and feeble lunatics led to a diminution in the number of cases of pneumonia and phthisis. At Berhampur, even the mildest cases of diarrhoea—a very trivial complaint—are at once admitted to hospital, which plan, if it raises the nominal sick rate, has the advantage of lowering the death-rate. Some difference of opinion exists as to the use of an "infirm gang," as maintained at Dacca and Dullunda Asylums. Colonel Hendley thinks the system a useful one and has recommended Government to order it to be kept up in all Asylums. The Superintendent of Berhampur Asylum thinks such a gang unnecessary, as all deviations from the normal condition should be treated in hospital under the eye of the medical subordinate. But, as Colonel Hendley says, it is to prevent such deviations that the infirm gangs were introduced. It simply means that weakly-looking persons are more frequently weighed, receive some extra ration and are given tonics with the advantage of keeping off serious disease. There is no doubt such a gang can be made very useful, provided that medical subordinates are not allowed to use (as they are too prone to do) the infirm gang as a sort of less troublesome substitute for hospital. This, however, is the abuse, not the use of the gang, and it is probably this point that Major Walsh had in mind. Numerous minor and important improvements in the sanitation of the Bengal Asylums were carried out during the year. The important subject of amusements for the inmates continued to receive attention; books, papers, cards, musical instruments and pet animals were provided. Nautches and theatrical performances were provided inside the asylums, and in Calcutta selected patients were taken under proper escort to the Zoological Gardens. The site chosen for the new Central Asylum at Chinsurah (Hooghly) was not considered satis-

factory by Colonel Hendley, and another was selected. We cannot help thinking that Chinsurah is far from an ideal site for a central asylum. Hooghly is by no means a popular station, a matter of some importance, as the appointment of Superintendent of the new asylum is intended to be made attractive, and a good man might well hesitate before accepting an appointment, otherwise a good one, when it means residence for many years at a station like Hooghly. The new asylum will be ready none too soon, for the description given of the Patna Asylum by Colonel Hendley and the Superintendent may be summed up in the words of the former: "Nothing short of demolition is required."

In the Punjab Asylums Report, Colonel A. Deane, I.M.S., notes a serious and steady rise in the population of the Lahore Asylum. There are only two asylums in the Punjab—at Delhi and at Lahore. The percentage of deaths is considered satisfactory, *viz.*, nine per cent. Twelve per cent. of the daily average strength are reported cured. Pneumonia was more prevalent, possibly due to the intense cold of the winter. A new asylum at Lahore is in course of construction. Surgeon-General Sibthorpe, in the Madras report, notes a steady rise in the epileptic population of the asylums. Many sanitary improvements were introduced—as portable pumps for washing out what are called "sewage cisterns." The dry-earth system is in vogue. The Superintendent recommends the artificial heating of certain rooms, a proposal not often heard in India. *Ragi* was the staple grain in use in the Madras Asylum. For destructive maniacs, special garments of canvas and drill, not removable by the wearers, were introduced at the Madras Asylum and proved useful. Gardening, weaving, preparation of grain, mat-making, etc., were the chief occupations of the insanes. Amusements were provided, as in Bengal. The health of the inmates was good; tubercle of lungs caused six deaths out of twenty-six. Surgeon-General Sibthorpe is not satisfied with the nursing arrangements. He suggests that members of the hospital staff should be male and female ward attendants trained in the General Hospital for a year, and then transferred to the Lunatic Asylum for a course of special training in sick-nursing of the insane.

MUNICIPAL ENGINEERING IN BENGAL.

It cannot fail to have struck the least observant that substantial progress has been made within the past decade in India in the important matter of educating the public on questions of public health and hygiene. We have never been advocates of raw and hasty measures which are but half understood and wholly dreaded by the public. We must take the East as we find it, and endeavour by educating it to bring it to appreciate the advantages of good sanitation, but to do so we must first educate the subordinates to whom must be entrusted in great measure the execution of many sanitary projects. On the question of sanitation the medical profession has joined hands with the engineer. The one cannot well get on without the other; therefore, while we endeavour to instil the first principles of hygiene into the Indian Medical student, it is no less necessary to do the same for the Indian Engineering student. Therefore, it is that we specially welcome the volume^{*} lately published by Mr. A. E. Silk of the Bengal Sanitary Board. In this book Mr. Silk has succeeded in conveying an immense amount of sanitary knowledge which cannot be otherwise than useful to those who attended his lectures at the Sibpur Engineering School, the students who will in the immediate future be the subordinate officers of the Public Works Department. This, however, is not our only reason for here calling attention to Mr. Silk's book. It is also because we believe it will be found useful by Civil Surgeons and Cantonment Health Officers, even if they have their Parkes' or their Notter's Hygiene at their fingers' ends. We say this because, as all who have much experience will agree, those invaluable and standard works on hygiene are written entirely from European standpoints, or when they deal with Indian affairs from a too exclusively army point of view. Many of us, however, have found that European experience on matters sanitary does not always suit Indian conditions. We could illustrate this by many examples. For instance, we know of a case where a medical officer was consulted as to the amount of water required for all purposes for a small garrison in a hill fort, and he promptly re-

^{*} Municipal Engineering, applicable to conditions existing in Bengal. By A. E. Silk, M. Inst. C. E., Sanitary Engineer, Bengal. Bengal Secretariat Press, 1899.

plied by quoting Parkes' estimate for a European manufacturing town, to the dismay of the engineers, who were not prepared to estimate for a fourth of that supply. Now, if that officer had had Mr. Silk's book to refer to, he would have found that about 7 gallons per head of the population has usually been found sufficient in the 31 mofussal towns of India which are provided with a Municipal water-supply. Again, we know of a case where a medical officer insisted upon the necessity of digging "deep" wells only, meaning by "deep" what Parkes defined as such; but Mr. Silk has pointed out there can be no such thing as a deep well in the alluvial plains that form the greater part of the Province of Bengal. "Land, that has been built up from the wash down of rivers like the Ganges, the Bramapootra or the Mahanadi, is of such a heterogeneous character that a true 'deep' well is an impossibility; there is absolutely no uniformity about these deposits, for you may make a boring of fifty or sixty feet deep in one spot and never come across a drop of water, whereas if you make a second boring a hundred feet or so away you will come across water a few feet below the surface and in comparatively large quantities."

There is another point on which we are glad to see Mr. Silk dwells with emphasis, and it is a point which is often neglected by those who should know better, that is, when water is being sent to a chemical examiner for analysis and report it is no use sending it unless the sample has been accompanied at the time of despatch by a minute and correct description of the surroundings and present condition of the source of supply of the water from which it was taken. The following facts with regard to the use of tube wells are worth here quoting. In 1896 the Sanitary Board made inquiries and found that tube wells had been tried by 16 district boards and 19 municipalities. In the districts 78 tube wells has been sunk, of which 58 had been successful; but in municipalities only 13 were successful out of 40 sunk. In many cases the failure was due, not to absence of water, but to the tubes cracking during driving and so ceasing to be air-tight. At any rate knowing how impure, generally the sub-soil water is near Indian towns and large villages, Mr. Silk recommends that they be used only in rural places remote from large collections of houses and huts. Mr. Silk's advice on the subject of the working

of filters in water-works is thoroughly up to date and practical and illustrated by the experience and the failures of many municipal towns. The following experience of a Pasteur-Chamberlain installation will be read with interest:—"While these filters are, no doubt, the best for domestic use or for large institutions where they can be properly looked after, yet it is unfortunately quite otherwise for town water-supplies. Theoretically it should be as easy to keep clean 100 filters collected in one house as 100 filters in 100 houses, but practically this is not the case. At one installation 8,750 Chamberland "candles" contained in 33 cast-iron cases were supplied, and a recent bacteriological examination of the unfiltered and filtered water-supply has shown that the latter contained more microbes than the former, the probable reason being that microbes have grown through the pores of the candles, for the cleansing is accomplished by cleaning the outside of the candles with ordinary soap, and soaking them for 12 hours in chloride of lime solution."

We must pass over perforce much that is valuable in this book, especially the chapter on drainage, which is commended to all who live in towns with a drainage scheme on hand. We must pass to the chapter on conservancy, and here again we come upon one of those practical remarks that are simply not to be found in ordinary textbooks based upon European experience only. With regard to the disposal of street sweepings we have often heard it advocated to build incinerators, as are often used in England, but Mr. Silk points out that these are not suitable to Indian conditions. In India street sweepings contain very much larger quantities of green vegetable matter, and very little cinders, so that the heat that is generated is absorbed in driving off the watery constituents of the vegetable matter until practically none is left for heating the boilers, which in England are provided to raise steam for driving electric or other machinery. Therefore Mr. Silk recommends that street sweepings be returned to the soil by using them to fill up tanks and hollows. If earth can be added the surface should be planted over with gourds or such vegetables, and after the gourd crop with Indian corn. Such filled up tanks should not be used for building purposes for at least seven years. As regards the methods of disposal of nightsoil, the almost universal practice

is by burying in trenches and pits, but it is only recently that this has been done in municipalities on scientific principles. The old practice of digging a big hole and throwing in tons of nightsoil is not wholly abolished yet. Our readers know how this work should be done and we need not delay on it. We may note, however, that in several Bengal municipalities the advantages of cultivating trenching grounds is understood, and quite large incomes are derived from the sale of the vegetables. On the other hand, we know a large institution in Eastern Bengal, where the person in authority refused to grow vegetables on this well manured soil; he thought they would not be "wholesome."

We have not space to devote to Mr. Silk's endeavours to popularise the biological method of sewage disposal, but we hope to refer to the matter soon, as experiments are being made, both in Simla and in Calcutta, to find out its adaptability to Indian conditions.

LONDON LETTER.

THE BRITISH MEDICAL ASSOCIATION AT PORTSMOUTH.

THE Annual Meeting of the British Medical Association took place at Portsmouth last week. It was in every way a success. Portsmouth is itself a paradise of sight-seeing—abounds in interesting places and objects, some of great historical note and many of present importance. The head-quarters of the British Navy with its types of war ships, ancient and modern, and the dockyards cannot fail to appeal to the curiosity and patriotic pride of the Britisher. Every facility was given to those attending the meeting to gratify these feelings and take advantage of the opportunities of seeing what was to be seen. An excellent guide to Portsmouth and Southsea, abounding in good maps and plans and profusely illustrated by pretty engravings, must have been greatly helpful to visitors, and will constitute a pleasant *souvenir* of the meeting.

EXCURSIONS.

Portsmouth is also a centre from which, by sea and rail and road, many places of beauty and interest can be reached; and arrangements were made by means of which a considerable amount of tripping—to the Isle of Wight, the New Forest, Salisbury, Porchester and so forth—could be accomplished. A fair proportion of the

hard-worked doctors, who frequent these meetings, make the occasion their annual holiday, and accompanied by wives and daughters manage to imbibe a good deal of fresh air, and forget the toils and worries of practice amidst beautiful scenery and in the excitement of changed and changing environment. Fortunately, the weather conditions were eminently favourable for an outing, and although the heat reminded one of the tropics, the sea-breeze was there to mitigate it.

ARRANGEMENTS AND ENTERTAINMENTS.

The local Committee spared no pains to make residence agreeable. The meeting was made welcome by the Mayor (a dentist) and the County Council, and dinners, garden-parties, balls and soirées filled up the portions of the day not devoted to graver pursuits. Reception rooms, cloak rooms, reading and smoking-rooms, post and telegraph offices were arranged in convenient places. The magnificent town hall was the centre in which the principal functions took place, and in close proximity rooms were provided for the meetings of sections, museums, lantern and mutoscope demonstrations, &c.

THE BUSINESS OF THE MEETING.

This consisted in general and council meetings, addresses, general and sectional, and discussions and reading of papers. Four days were devoted to these purposes, and it seems extraordinary what an amount of ground was covered, and work done by organization and methodical arrangement. The President's address, giving a retrospect of progress in medicine and surgery during the century, was admirable. Dr. Waid Cousins has the gift of eloquence, and delighted as well as instructed his audience. Sir Douglas Powell's address in medicine was scientific and thoughtful, and full of suggestive comment on the most advanced work of the day in pathology and bacteriology. Professor Ogston, of Aberdeen, delivered the address in surgery, and devoted himself to a consideration of the position and requirements of the medical services of the navy and army in view of the great advances which scientific medicine and surgery have made in recent times, and the necessity of maintaining these services fully abreast of progress and thoroughly efficient. He was forcible and earnest, but perhaps somewhat pessimistic. He sketched the arrangements in existence in

Germany, Russia and France for the purpose of preparing military surgeons for their work and furnishing them with opportunities for continued study, theoretical and practical, both of a general and special kind.

THE PUBLIC MEDICAL SERVICES.

His address will undoubtedly arouse attention to the need of furnishing naval and military medical officers with systematic training in their work, with skilled and trained assistance, with sufficient establishment and appliances and with opportunities for practising the methods of succouring the sick and wounded in war, and with means of seeing and knowing what improvements are taking place in the science and practice of the ever onward-moving medical profession.

It is not quite certain, however, that Continental methods are applicable to British institutions. The Briton does not require to be put in leading strings or nursed into maturity of a somewhat conventional type. The conditions of recruitment and service of the British Army differ radically from those of Continental armies and, given proper organization, establishment and appliances the British Medical Officer is apt to rise to the occasion and acquit himself worthily. Still, the efficient care of the sick and wounded does not come by intuition, and there is plenty of room for developing and extending those arrangements for training and exercising the naval and military medical officer for his special work which have been already instituted at Haslar, Netley and Aldershot; and above all there is an extremely strong case for the systematic and liberal grant of study leave.

THE TROPICAL SECTION.

The section devoted to the study of tropical diseases was naturally haunted by men whose life and work had been spent and done in the tropics, both in the services and other capacities. The attendance at this section was good, and the proceedings lively and full of interest. Dr. George Thin gave, in his opening address, an excellent summary of recent work done by Ross and others with reference to the life history of the malaria parasite, both within and without the body. A discussion followed, which was opened very ably by Dr. George F. H. Nuttall, of Cambridge, on the agency of insects in spreading disease. Another discussion opened by Dr.

Thin took place on the subject of sprue, and a third, opened by myself, on the alleged microbic causation of thermic fever. Papers were read on filarial periodicity, hæmoglobinuric fever, liver abscess, terminal dysentery, bilharzia, hæmatobia, and other subjects which were listened to with attention and gave rise to profitable discussion. On the whole, the tropical diseases section was a decided success.

DR. BAHADURJI'S MOTION.

Dr. Sarat Mullick brought forward the well-known proposal which was moved by the late Dr. Bahadurji at the Carlisle meeting, and referred by it to the Indian branches of the Association. He did so in a very gentlemanly way, and while giving due credit to the Indian Medical Service for all that it had done in the past for his country and countrymen, in medical relief, medical education, sanitation and generally in creating and promoting rational medical science and practice in India, he urged that educational, scientific and sanitary appointments should be thrown open to the profession at large. There was no difficulty in showing that the Indian Medical Service was quite equal to carrying on in the future the work which it had initiated and performed in the past; that the Government of India might be trusted to adopt the best possible measures for selecting the best available agency for doing its medical and sanitary work, and that all Indian medical appointments were open to any one who took the trouble to qualify for the competitive examination which constituted the portal to the Indian Medical Service. The motion was put to the vote and lost.

K. McL.

10th August, 1899.

Current Topics.

SCARLET FEVER IN INDIA.

WITH reference to the question of scarlatina in India in our August issue, we have up to now received some sixty or so replies to the queries suggested by Drs. Caddy and Cook. In only one*

* Since the above was written we have received notes of another case from Lieut-Colonel J. MORAN, M.D., I.M.S., Civil Surgeon of Missouri. This case was met with in April 1881 at Moradabad, in a Scotch lady. The infection was probably conveyed through a nurse. It occurred four days after child-birth. Vivid redness of mucous membrane of throat was noted, no ulceration, tongue at first covered with

instance did any medical man send a positive reply. Captain McNaught, R.A.M.C., had seen a few cases among European soldiers' children in the lines at Quetta; he was quite sure of the diagnosis, and as an ex-resident medical officer of the Glasgow Fever Hospital, he is scarcely likely to be mistaken. In every other instance the replies were all negative, and were received from men in all parts of Burma, India and Ceylon. By a strange coincidence it happened that our contemporary the *Journal of Tropical Medicine* discussed the same question in its issue for July. In the August issue now to hand, we find an article by Colonel K. McLeod, of Netley, in which he refers to all the cases reported in the columns of the *Indian Medical Gazette* for the past 30 years. He concludes that (1) scarlet fever has often been imported by troop-ships, and that small epidemics in Indian native children have occurred. (2) Such epidemics were always of a very limited kind and have speedily died out. (3) They appear to have been more protracted in hill stations than on the plains. (4) Cases and groups of cases have been observed, the origin of which could not be ascertained. (5) The disease does not prevail epidemically among the indigenous races. (6) Cases of an exanthem closely resembling, if not identical with scarlet fever have appeared in Calcutta and elsewhere. These have been mostly single and limited to one family, and have shown no disposition to diffusion. The subject was dealt with editorially in our columns so long ago as 1871, *à propos* of an outbreak of 110 cases in the 44th Regiment. From a note by Dr. Izett Anderson it appears that scarlet fever is equally rare in Jamaica.

TEACHING OF TROPICAL DISEASES IN LONDON.

FOR the sake of those of our readers who may shortly be proceeding on long leave, we reproduce here a few notes which we have received from the "man on furlough."

"The best lectures at present delivered in London, on diseases of the tropics, are those given by Dr. Patrick Manson at St. George's Hospital. The course, the fee for which is £3 3s., lasts about two months, beginning in the middle of May and ending in the middle of July. The lectures, of which there are 20 in all, are delivered twice weekly, on Tuesday and Friday, at 5 P.M. The substance of the lectures will be practically found in the lecturer's most excellent Manual on Tropical Diseases. The lectures are

brownish fur, afterwards red and raw. The rash was noticed on the fifth day after delivery. Desquamation began on fifth day of rash and continued for three days. The temperature was high and did not reach normal till the 12th day of the scarlatina. Two months after the toe-nails were reported to have been shed; no other sequela. The infant female child was also attacked on second or third day after the mother; the attack in the infant was very slight.

given in a clear, lucid style, illustrated by cases drawn from the lecturer's unrivalled experience in the treatment of these diseases. Proportionally the largest number of lectures are devoted to the subject of malaria, and Dr. Manson, when dealing with this subject and with the filarial diseases, is undoubtedly at his best. At the conclusion of the lectures, beautiful microscopic preparations of the various malarial parasites in varying stages of their development, specimens of the various filariæ, ova of the different nematode worms, &c., are shown. Dr. Manson is an enthusiastic worker and teacher, and it is well worth attending his lectures if only in the hope of being infected with some of his persistent earnestness in the pursuit of knowledge of his special subject. Through the courtesy of Dr. Manson, the members of his class were enabled to see his cases at the Seamen's Branch Hospital, Victoria and Albert Docks, on his visiting days, *viz.*, Monday and Thursday, at 3 P.M. Here living malarial parasites in various stages, crescents, flagellated bodies, &c., were demonstrated under the microscope, and the methods of making preparations shown. As regard the Branch Hospital, there are at present only 25 beds, though this number will be doubled when the new buildings are completed. Of these 25 beds, a considerable number are occupied by surgical cases, so that to a visitor from India the material for teaching seems somewhat scanty. This lack of clinical material appears likely to be the chief obstacle to the success of the new tropical school shortly to be opened (October next), though it is probable that Dr. Manson with his usual energy will find means to overcome the difficulty and fill his beds with suitable cases. During the time the lectures lasted, the cases of tropical disease admitted to the ward consisted of sufferers from malarial fever, dysentery, beri-beri and liver abscess."

GOOD HEALTH AND BAD WATER.

THE following extract from the report of the Inspector-General of Prisons, Burma, is instructive:—

"It may be well to record here that though the inmates of the Magwe Jail use, for all purposes, water containing from 70 to 80 grains per gallon of solids in solution, with 6 to 7 grains per gallon of chlorine, and the inmates of the Myingyan Jail in the same way use water containing from 109 to 130 grains of solids, with 3 to 4 grains of chlorine (in the latter jail the water is boiled), yet these two jails continue to be the healthiest in the Province."

THE CENTRAL PROVINCES PLAGUE REPORT.

COLONEL HUTCHINSON, I.M.S., was the Administrative Medical Officer who reported on the out-

breaks of plague in the Central Provinces in 1898. Up to November 1898, the preventive measures on the railways were successful in keeping out the disease, 22 cases having been detected at various stations—8 at Itarsi, 4 at Nagpur, 2 at Burhanpur and 2 at Sohagpur, and the rest at minor stations. At Khandwa a traveller arrived on 20th October, developed plague on 25th and died on 29th. Next day a dead rat was found in his house, and on 2nd November another inmate fell ill of plague. The house was isolated and supervised, and the disease spread no further. Other outbreaks occurred at Hinganghat, at Wardha, Bhandara and Nagpur. In Nagpur, up to November 1898, five imported cases had been met and promptly treated. At last a case was concealed with the inevitable result that the disease spread, and 36 cases, 29 fatal, took place in a town of 93,000 inhabitants. The people left each locality in the town as it became infected, which may explain the few cases which occurred in a large town like Nagpur. In the Hinganghat and Wardha outbreaks 653 persons were inoculated. The names of Major Silcock, I.M.S., and Dr. Horendro-nath Ray are specially mentioned for good work done.

DISEASES IN CENTRAL ASIA.

MR. F. H. SKRINE (I.C.S., *ret'd.*) in his recent book, "The Heart of Asia," has something to say of the diseases prevalent in the new dominions of the Tzar.

"Intermittent fevers have been very prevalent. That this scourge is connected with irrigation is without a doubt, for the western districts, where water is scarce, are comparatively free from it." "The conditions prevailing," writes the ex-Bengal Magistrate, "are precisely the same as those in Central Bengal which is in the process of being slowly depopulated by malarial fevers." [This is nonsense.] In both countries we have a water-logged subsoil. Small-pox is as fatal in Transcaspia as malarial fever. Epidemics used to come annually, but the Russians introduced vaccination, and instead of 50 per cent. of the children being disfigured or slain by the pest, small-pox is almost unknown, vaccination being now popular after surmounting a vast amount of prejudice. Enteric fever, which (says Mr. Skrine with Oriental exaggeration) is increasing in Indian garrisons in an alarming ratio, is rare in Central Asia. The last cholera epidemic was in 1892, when it travelled very rapidly along the line of rail, causing 1,859 deaths out of 3,471 attacks. The loss by death and invaliding to the Russian army in Transcaspia exceeds 30 per mille annually.

THE LATE DR. MARIA DOUGLASS.

A RANGOON correspondent sends us a sympathetic notice in the *Rangoon Gazette* of the

late Dr. Maria Douglass, who recently died in America. Dr. Douglass belonged to the American Baptist Mission, and in 1887 was appointed in charge of the Lying-in-Hospital, Rangoon. In 1889 the Burma Branch of the Dufferin Fund recorded their very high sense of the services rendered to the institution by Dr. Maria Douglass.

BERI-BERI *versus* MALARIA.

A *propos* of the dispute in Rajahmundry Jail on the nature of the sickness there, it is interesting to find that the same difference of opinion exists in another supposed endemic home of beri-beri, *viz.*, Rio de Janeiro.

Havelburgh, of U. S. Marine, states that he has often seen cases said to be beri-beri, but which he considered paludal infection, and his colleague, Dr. Fajardo, had discovered a hæmatozoon in 52 cases with 6 necropsies which had a "strong resemblance" to that of malaria.—(Surgeon-General, U. S. M. Report, p. 282.)

A SANITARIUM FOR SIMLA.

WE heartily endorse the following:—

"A want that has been growing on Simla for years, and that is felt with increasing urgency each successive season, is that of a hospital and convalescent home for European patients after the pattern of the Eden Sanitarium at Darjeeling or the Ramsay Hospital at Naini Tal. The question was taken up in earnest by Colonel B. Franklin, C.I.E., on his return to Simla in the capacity of chief of the Civil Medical Department in the Punjab; but although all the authorities were in a general way benevolently disposed towards the project, the scarcity of sites and their expensiveness when found promised to make the question of obtaining a starting point for practical work a long and difficult one. Suddenly all difficulties on this score have been resolved by the generosity of a private individual. Mr. James Walker, C.I.E., not content apparently with all that he has done for Simla during the many years of his personal connection with the place, has just made a promise of his estate, Gorton Castle, perhaps the most valuable house property in the station, as a free gift for the purposes of the proposed sanitarium."—*Pioneer*.

BERI-BERI.

WE would be much obliged if medical officers serving in Madras or Burma would communicate with us on their experiences on the prevalence or otherwise of beri-beri. No disease has given rise to more controversy in India and elsewhere than beri-beri, yet when one reads the text-book descriptions, the condition of the heart and the neuritis should alone, one would think, settle

the diagnosis. It is about time that its existence or prevalence in India were settled.*

QUININE-MAKING IN BENGAL.

MAJOR PRAIN'S interesting report for 1898-99 has recently been published. The total number of living plants in stock amount to considerably over two millions. The outturn of the factory was 10,335 lbs. of sulphate of quinine and 3,921 lbs. of cinchona febrifuge. This large amount is absorbed in the issues to the medical store depôts at Calcutta and Mian Mir, and to the Alipur Jail for manufacture into "pice packets" for sale through the post offices. Another large amount was sold to hospitals and dispensaries and to the public. There appears to be no quinine exported to other countries. An arrangement has been made between the Madras and Bengal factories about the purchase of bark.

SHOOTING IN THE TERAI.

It having been brought to the notice of the Lieutenant-General Commanding the Bengal Army that five soldiers who had been granted shooting passes had become seriously ill from the result of exposure and malaria, it has been ordered that no passes shall be granted to shoot in jungles unhealthy during the greater part of the year, e.g., in the Terai, Dun and Nerbudda Districts, until the local medical authority has ascertained that the district in question is free of malaria; also in the hot weather tents must be sent with parties out shooting for over three days.

THE ARMY TEMPERANCE ASSOCIATION.

We have received the report of the Army Temperance Association, a society which every one who has the interests of the British Army at heart is interested in. We are glad to read of general progress all round. Here we are more concerned with the effects of temperance on health. We never could see why temperance men should get enteric more than others. If the microbes exist in soda-water, the addition of whisky will not kill them. Statements have been made recently that enteric is more common among temperance men, but the General Secretary calls them "wild and prejudiced statements" which he hopes soon to refute. We will gladly see his refutation. The report is chiefly concerned with the relation between drink and what is here politely called "preventible disease" or what the *British Medical Journal* in a moment of modesty called once "enthetic

disease." The report says there has been a falling off in this most preventible form of disease, a decrease of over 5,000 admissions to hospital. The admissions *per mille* among abstainers were 208, among non-abstainers 301. This is satisfactory and a distinct improvement on the figures for 1897.

AN ANTI-MALARIAL TREE.

We learn from our contemporary *Indian Gardening* that *melaleuca leucadendron*, or the cajeput tree of North India, &c., has a great reputation in Australia and Jamaica as anti-malarial, superior even to the eucalyptus. We are afraid, however, that now-a-days this will not be attributed to any antiseptic or "anti-miasmatic oil," but rather to the fact that the tree grows quickly and helps to drain damp soil

PLAGUE IN EUROPE.

PERHAPS the fact that for several days or weeks the existence of plague at Oporto was concealed by the Portuguese authorities, will lead critics in their arm-chairs in London to be more sparing in their criticism of plague measures in India. When the plague is far away it is very easy to say what should be done.

What proof is there that the disease was introduced into Oporto by means of clothing or cloths from India? By-the-by it is curious that in few of the recent outbreaks the origin could be traced, e.g., in Alexandria. There is many a Continental town in which plague should be able to find a congenial soil. It is also reported near Delagoa Bay.

THE INDIAN MEDICAL GAZETTE.

ARTICLES published in this Gazette during the past year were quoted no less than 38 times in the last Report of the Sanitary Commissioner with the Government of India.

TYPHOID FEVER IN THE FRENCH ARMY.

THE *Archives de Médecine Navale* for June contains an interesting article on enteric fever in the French Army. The garrison at Cherburgh suffered greatly. From November 1898 to January 1899 no less than 628 cases were admitted. The mortality was only 10 *per cent*. Dr. Nollet inclines to attribute this violent outbreak to the heavy rains in October washing sewage from the fields into the drinking water. The barracks were also in a very inferior hygienic condition. The bacillus of Eberth was said to be found in the floor dust. It is somewhat remarkable after the praises which have been sounded about the Pasteur filter having banished typhoid from the French Army to find Dr. Nollet recommending the abolition of this filter. It is apparently as bad as the old Macnamara

[* We are glad to see that Mr. Chamberlain has arranged that Dr. Hamilton Wright is to go to the Malay Peninsula to investigate this disease. The Royal Society is also supporting the scheme, which we wish every success. It may be remembered that some years ago Pekelhaering and Winkler were sent out for the same purpose by the Belgian Government. The results of their labours are to be found in their work on Beri-beri, translated by Mr. J. Cantlie (Young J. Pentland).—Ed., I. M. G.]

filter of the British barracks. Dr. Nollet confesses the French were infatuated over the Pasteur filter, and "now none so poor as do it reverence." We are still, therefore, without a satisfactory filter in spite of all that has been said and done about the Pasteur one.

THE CORONER IN THE MOFUSSAL.

WE call the special attention of those concerned and invite comment upon Major Walsh's article in this issue. We are sure that all Civil Surgeons will agree with him that something should be done to make this work less disagreeable, we were going to say less repulsive, in the hot weather. When we remember that in several Bengal districts there are 200 or 300 autopsies to be done in a year, the matter becomes one of great importance in the interests of justice.

OUR CONTRIBUTORS.

CONTRIBUTORS are reminded that we go to press not later than the 7th of each month, therefore articles intended for publication in next issue should be in hands of the Editor on or, if possible, *before* the 7th of each month.

Reviews.

Extra-Uterine-Pregnancy.—By JOHN W. TAYLOR, F.R.C.S. (Eng.), Senior In-patient Surgeon to the Birmingham and Midland Hospital for Women; Consulting Surgeon to the Wolverhampton Hospital for Women. London: H. K. LEWIS, 1899.

THE Ingleby Lectures for 1898, altered and considerably enlarged, form the basis of this book. The book begins with a slight introductory and historical sketch, in which very properly the author calls attention to the number of human lives which have been saved by the advance of modern surgical knowledge and treatment in this direction. As regards the causation of extra-uterine gestation, the author cites 43 cases, in which no evidence of pre-existing inflammation of uterine appendages could be elicited, the factor appearing to be mechanical obstruction. Passing on, the author ably describes the various forms of tubal pregnancy (the chapter on tubal mole and hæmatocele being specially clear); in tubo-abdominal pregnancy, he points out that the pregnancy may pursue an uninterrupted course to term—if the foetus *enclosed in its unruptured membranes* escape into the abdomen of the mother—the placenta retaining its attachment to the tube and receiving sufficient blood-supply from the maternal blood-vessels. The theory hitherto advanced being that every extra-uterine pregnancy, which

has survived the primary rupture of the tube, has continued its development beneath the peritoneum sheltered within the folds of the broad ligament; that here it has remained until the seventh or eighth month, when a secondary rupture of the broad ligament cyst has taken place, and the child having attained an age to resist the efforts of digestion which would doubtless be directed towards it survives. For this theory the author substitutes the *fact* of a case operated on at the Spark Hill Hospital for Women on 11th December 1896 (*see* p. 48), when careful examination showed the amniotic sac surrounding and protecting the foetus in every direction, thus explaining how the child could inhabit the peritoneal cavity of the mother and still survive.

Chapters XI and XII are devoted to diagnosis. The points in the same are fully described and give evidence of wide clinical observation. Early rupture of the tube with diffuse hæmorrhage may be the most difficult to diagnose, and at the same time is the most rapidly fatal to the patient. The writer justly gives prominence to the general symptoms of *internal hæmorrhage*, there being no pelvic or abdominal signs of any importance or certainty in many cases. In later developments of extra-uterine pregnancy history and physical signs increase in value, and therefore to these more attention can be directed. Physical examination will reveal much, and the author enters into its minutiae with much care. He gives, as a rule, on p. 117, that a gravid retroflexion should never be diagnosed without first carefully excluding extra-uterine pregnancy.

Chapters XIII and XIV enter very thoroughly into the question of treatment, and the choice of operations, either vaginal (anterior or posterior coeliotomy) or abdominal.

It would be impossible in the short space at our disposal to enter more minutely into the general arrangement of this book; but it will, we believe, be found a complete and satisfactory text-book on the subject; no difficulties of importance are avoided, and it is illustrated by over sixty figures, which have been well-selected, as affording examples typical of conditions commonly met with. It will, we believe, be found invaluable as a work of reference.

The Serum Diagnosis of Disease.—By R. C. CABOT, M.D. London: LONGMANS, GREEN & Co., 1899.

THE subject of serum diagnosis is "one of the corollaries or by-products of the immense amount of labour and thought which have been expended of late years upon the problem of immunity." The method of diagnosis depends on the agglutination reaction of the pathogenic bacteria of a given infective disease when treated with any of the body fluids of an animal immune against,

the same disease, or with those of a person suffering from this disease. The method, therefore, has a two-fold application—it may be used for the diagnosis of a disease and for the identification of micro-organisms.

The discovery of the serum reaction is ascribed by the author to Charrin and Roger, though its first practical application is credited by him to Vidal, whose name is commonly associated with it. Briefly the reaction is this:—If a drop of blood or other body fluid, taken from an animal immunized against, say, cholera, be added to ten drops of a bouillon culture of the cholera vibrio, the vibrios lose their motility and gather together in clumps; further the same clumping reaction is shown by the vibrios killed by mild antiseptics or a temperature of 60° C.

The test is described as a very simple one, which can be carried out by the physician in his consulting room without the exercise of much skill or labour. The appearance of "The Serum Diagnosis of Disease" should therefore be welcomed by every practitioner.

The work is divided into three parts: the first part is devoted to technique and the methods of performing the test, and the reactions are described clearly and concisely. The second part deals chiefly with the serum reaction in typhoid fever. Tables are given of 5,978 cases of typhoid fever tested with the serum reaction, and of 5,668 cases of other diseases tested similarly; of the former 97.2 per cent. gave a positive reaction, of the latter only 5 per cent. Twenty cases in which the test was used, illustrating its diagnostic value, are also quoted. The third part describes the applications of the serum reaction in the case of a number of other diseases including cholera, plague, diphtheria, tetanus, tuberculosis, leprosy, yellow-fever, etc.; but in many the reactions are uncertain or of little practical value. For instance, in the case of plague, it is stated that the agglutinating power of the blood upon Yersin's bacillus does not appear till the fifth, sixth or seventh day of the disease, but gradually increases after this, so that the author admits that in the case of this disease the serum test does not promise much practical value in diagnosis. The volume ends with a summary of the views expressed at the discussion on serum diagnosis at the meeting of the American Medical Association at Philadelphia in June 1897; and a long biographical list is appended.

Dr. Cabot is to be congratulated on the results of his labour in producing this work. It is clearly and concisely written, and we confidently recommend it to the attention of the medical profession in India, where typhoid fever is much more common among the natives than it is generally believed to be, and where its diagnosis is beset with many difficulties.

Annual Report of the Supervising Surgeon-General, United States' Marine Hospital Service, for 1898. *Washington Government Printing Office, 1899.*

THIS report, which in many respects corresponds to that of the Surgeon-General with the Government of India, contains a vast amount of information with regard to sickness and mortality in the States. The term *marine service* is something of a misnomer; the service is in reality a huge state Sanitary Department. Whereas in our Indian reports, within the past year, the question of plague looms largely, in the American report yellow-fever takes its place. It is interesting to note that the two diseases are fought upon practically similar lines. The rules for suspect and detention camps for railway train inspections are almost the same as we have become familiar with in India. Besides official matter, returns and reports, the volume contains a large number of valuable articles on the diagnosis and etiology of yellow-fever. As regards diagnosis, the disease has especially to be differentiated from the severer forms of malaria (bilious remittents they used to be called) and from dengue. Dr. Guiteras, who has a wide reputation as a yellow fever "expert" and "immune," writes (p. 297) that the diagnosis of yellow-fever must rest upon three symptoms, *viz.*, the peculiar *facies*, the albuminuria and the want of correlation between the pulse and temperature. The early occurrence of albuminuria is often relied upon; the icteroid hue of the face is not unknown in bad anæmic cases of malarial fever, and recently Thayer in an article criticised in our columns pointed out that in bad malarial attacks (and it is only in such cases that the question of diagnosis will arise) it is far from uncommon to find albuminuria. This point is not referred to in Dr. Guiteras' article. The volume, on the whole, is a mine of information on every point connected with yellow-fever—a disease which fortunately has not yet troubled us in India.

Current Literature.

MEDICINE.

Climatic Buboes.—Dr. B. Scheube, of Greiz, author of a volume on tropical diseases, has an article on what he calls "Climatic Buboes," which is translated in the *Journal of Tropical Medicine* (June-July, 1898). In 1896 R. Ruge reported on 38 cases of inflammation of inguinal glands which he had observed among sailors of the German Navy at Zanzibar. These could not be traced to any venereal cause. There was often fever, one side or both might be affected. The swelling developed rapidly in a few days. In 60 per cent. of cases the swellings retreated, in others the buboes had to be opened or

excised. None were fatal. C. C. Godding (*British Medical Journal*, September 26th, 1896), reported on a non-venereal bubo in the British Navy. It was chiefly observed on East Indian and China stations, also on East African Coast. Major Skinner, R.A.M.C., reported on numerous cases in Calcutta in the Shropshire Regiment recently landed from Hong-Kong, where they had done splendid work in fighting plague. Usually fever came first; many patients were malarial cachectics. Nagel in German East Africa saw many cases among officials and planters, most cases had been in Africa over a year and had suffered from malarial fevers. Rage denies that malaria is a cause. Godding noted splenic enlargement in only one case. Skinner failed to find the malarial parasite in several cases examined. Ludwig Martin in Sumatra noted that malarial cases were often affected with buboes of the oblique inguinal glands. In Madagascar, Lesueur-Florent in 1895 noted several cases on boardship—buboes with fever. Ruber and Bodner have in Hungary reported cases of what they called "*bubo malaricus*." We have thus an extensive distribution. In Japan, Scheube noted 16 cases similar to above. He could find no connection with malaria. J. Cantlie (*Lancet*, 1897) took another view that such cases are *pestis minor*. The epidemic of plague in Mosotamia in 1876 was preceded by non-febrile glandular swellings—and the same followed after the epidemic had spent its force. Idiopathic buboes prevailed on the South Coast of China several years before the outbreak of plague. Epidemics of buboes have been observed without being followed by plague. "*Pestis minor*" set in at Singapore and the Straits Settlements at the same time as on the China Coast, but was not followed by plague. Scheube adds that D. D. Cunningham found bacilli in cases of "*pestis minor*" [we presume he here refers to Dr. W. J. Simpson's celebrated *Howrah cases* in 1896]. Scheube assumes that "*pestis minor*" was observed in Calcutta several years before the actual plague appeared (in this way is history written!) It may be noted that plague has been found in nearly every place where these "climatic buboes" have been noted, except Scheube's own cases in Japan in 1876. [One cause of "non-venereal bubo" which I have frequently noted, e.g., at Midnapur among prisoners, is the irritation produced by scratching (with nails none too clean) patches of "dhobies' itch" in the groin.]

Prophylaxis of Malaria by Quinine.—(*Therapeutic Gazette*, April, 1899). The following is an American view of this question. The daily use of quinine in large or small doses for any length of time to ward off malaria is an abuse of it. It does more harm than good. During the civil war in 1862 my regiment was in Northern Mississippi, where there was much malaria. While there I received an order, which originated with the Surgeon-General, to deal out to all the men a daily ration of quinine and whiskey. I had previously practised eleven years in a malarious district and knew the order was wrong, but I obeyed it. And what was the result? Just what I knew it would be. For the first few days the men were jolly; then they began dropping into my hospital. Those who had slight diarrhoea had it assume a dysenteric character, with red tongues and feverishness; others came in with a low form of irritative nervous fever. I think in about two weeks I had nearly half the regiment at morning call complaining of one thing or another. I stopped the quinine and whiskey. Such practice is always an abuse of quinine.

Forty years ago somebody in a medical journal advised the giving of large doses of quinine, ten and fifteen-grain doses, in the early stage of bilious fever, no matter how high the fever was. I tried it. It would break the fever in two or three days, but it did not cure the patients. They were longer getting well than those who received the ordinary treatment. It is an unsafe treatment, clearly an abuse of quinine.

Cold Sponging versus Cold Bath.—Dr. H. A. Hare (*Therapeutic Gazette*, March 15th) affirms that he

has used cold sponging in his hospital practice and rarely the bath, with the most satisfactory results. He suggests the following rules of treatment:—(1) In early typhoid, with constipation or moderate diarrhoea, give a full dose of calomel in divided doses, in order to stimulate the liver and antisepticise the bowel with bile. (2) Control the fever, when it reaches 102° F. by sponging. The patient being stripped and laid on a rubber sheet, or blanket over a sheet, he is to be sponged with water adapted in its temperature to his needs, and it is to be remembered that the rapid application of a low temperature is more refreshing than the prolonged application of a higher temperature (Baruch). The chief advantage of the cold sponge lies in the shock and reaction. This is better obtained by the use of ice sponging than by the bath. The patient's surface is always bright red in ice sponging, often blue in the bath, and that the fever is not the chief danger in the case renders the fact that, as great a reduction from the sponge is not reached as from the bath of little importance except in hyperpyrexia. Shattuck tells us that he has found no marked or constant difference in the antipyretic value of cold sponging at 60° F. for twenty minutes, the cold pack at 60° F. for sixty minutes, or the cold bath at 70° F. for ten or fifteen minutes. Finally, if this does not bring the temperature down to 100.5° or 101° F. in twenty minutes, resort should be had to the tub.

It is essential when the sponging is used that more water be applied to the back than to the trunk of the body, for at the back the great muscles and thick skin retain the heat as a reservoir, and are not cooled if only the front of the body is sponged. Further, the posterior surfaces are the ones apt to be congested and sore, from the dorsal decubitus, and therefore need the stimulating effect of the bath, as do the kidneys and other deeply situated organs. That this treatment is of value is shown by the marked redness of the skin, the improvement of the circulation and respiration, and the cleared mind. (3) It is advisable not only to use friction in a light form, but to use moderately active massage, with the same objects in view as when the rest cure is undertaken, for the proper treatment of typhoid is a modified rest cure. The writer is firmly convinced that by this means bedsores, local congestions and effusions, oedematous swellings, peripheral nerve pains, and muscular feebleness will be largely decreased, and Pospischal has shown that mechanical irritation of the skin is capable of increasing heat loss 95 per cent. (4) In nearly all cases give more nourishment than the average typhoid patient in the past has usually had. With the exception of broths and meats, almost any article easy of digestion should be allowed—as one or two or more lightly boiled eggs, corn-starch, arrowroot, &c. (5) Use stimulants in carefully graduated doses whenever the circulation needs them, particularly alcohol. Even the cold-bath enthusiasts give whiskey to overcome the depression they often produce.

It will be seen that Dr. H. A. Hare, of Philadelphia, does not agree with his namesake Dr. F. Hare, of Brisbane, the author of "*Cold-Bath Treatment of Typhoid*."

W. J. BUCHANAN, B.A., M.B.

MILITARY MEDICINE AND SURGERY.

THE Army Medical Report for 1897* contains a vast amount of interesting matter; the surgical history of the frontier campaigns is treated in detail, but we regret to see no explanation of the prevalence of enteric fever in the moving camps during the campaign, a feature in the hospital returns which was much commented upon at the

* For the loan of this Report we are indebted to Colonel T. H. Hendley, I.M.S., C.I.E., Inspector-General of Civil Hospitals, Bengal.—Ed., I. M. G.]

Oct. 1899.]

time, and one which is not easy of explanation on the water-borne theory of the disease. In the Tirah Force there were 258 admissions with 64 deaths for enteric fever.

Enteric Fever in South Africa.—In view of the possibility of war in South Africa it is worth noting that enteric fever prevails in many stations in the South African Command. Out of a strength of 7,000 there were 160 admissions and 12 deaths from enteric fever in 1897 (death-rate of cases is very low, but is exceptional, as other years it was 22 per cent. and 18). Enteric is noted as common among the civil population in many towns in South Africa; there were nine cases at the newly founded city, Bulawayo. 74 per cent. of the admissions were in young soldiers with less than one year's service. Major D. Bruce, F.R.S., found the water-supply chemically and bacteriologically good. As often happens the system of distribution lends itself to possibility of contamination. Condensed milk only was used. In Pietermaritzburgh there is little doubt enteric fever is always present. There are no sewers, only surface drains. Malarial fevers chiefly showed themselves in a regiment stationed in Rhodesia and in one recently arrived from India. Enteric is said to be common among the Kaffirs.

Newera Eliya.—The hill station of Newera Eliya in Ceylon was re-occupied as a hill sanitarium for British Troops for the first time since 1874 when it was abandoned as "unsuitable." The climate is fine and bracing, except during June, July and August when the S.-W. Monsoon renders it worse than even Darjeeling. Pasteur filters were installed at all Ceylon stations in 1897.

Indian Troops in China.—The following remark is interesting "Asthma is a complaint to which natives of India residing in Hongkong are particularly prone; it rapidly unfits a man for a soldier's life. Curiously when the men affected with asthma go on leave to the dry climate of the Punjab, they say the disease leaves them at once, but returns at once on their coming back to Hongkong."

Foot-soreness among Soldiers.—All armies have suffered from this. There is always a certain number of men who suffer from tender feet. This is no doubt connected with the growth of micro-organisms, the warmth and moisture making the foot an almost perfect incubator, and the organic substances contained in the perspiration provide a constant supply of nutrient material for the development of bacteria. The skin, socks and boots become so highly charged with micro-organisms that the smallest abrasion becomes a sore. Many antiseptics have been employed. Salt water and vinegar were old remedies, washing the feet with mercurial and carbolic lotions, the free use of boric acid have all been found useful. The "foot-powder" of the German Army consists of salicylic and chromic acids which hardens the epidermis and acts as a germicide. Tannoform which has no smell may also be tried (tannin and formaldehyde), or a solution of formic aldehyde (the now fashionable germicide). For offensive feet wash the soles, and between the toes with 2 per cent. solution of formalin, also wash the inside of boot and socks in same solution. Another foot complaint of soldiers which apparently is common in the continental armies is called **foot oedema**. It has been described by Dr. Stechow. It is a thickening or swelling of the feet of young soldiers, and is usually been regarded as a swelling of the soft parts, rheumatism, periostitis, or strain of the ligaments. Dr. Stechow used the Röntgen rays and found in 35 cases out of many that there were thickenings and irregularities of the metatarsal bones, chiefly due to fractures. His theory is that the slender metatarsal bones get nipped between the stouter and more rigid first metatarsal bone and the boot, when there is any jerk or irregular action as in drill and gymnastics. It appears, therefore, that fracture of the

metatarsal bones is far more common than was suspected, and that it must be regarded as an injury incident upon military training. The point is one worth attending to. (Major Macpherson, R. A. M. C.).

Undulant Fever.—In 1897 Malta or Undulant Fever appeared for the first time in the returns of the British Army as a separate heading. In Malta we find 422 admissions with 13 deaths returned under this heading.

The Cold Bath Treatment of Enteric Fever in India. Some time ago in a review of Hare's cold-bath treatment of enteric fever it was remarked in these columns that it would be interesting to see this method systematically tried in India. This we are glad to see has been done and a report on 111 cases so treated by Captain F. R. Newland, R. A. M. C., is herewith synopsised from the A. M. D. Report for 1897, where comparatively few are ever likely to see it. It forms part of an interesting report on the outbreak of enteric in 1896 in Quetta. Out of a total of 141 cases 111 were treated by cold water in one or other of the following methods (with a death-rate of 17 per cent. which for India is certainly good) viz:—

I. The cold bath method of Brand (Temperature 65°F.).

II. The graduated bath (90°F. cooled down to 65°F.).

III. Wet packing and ice packing.

The majority were treated by the Brand method with one modification that the "bathing point" was taken as 103°F. rising in axilla instead of Brand's 102°F. Usually about six baths a day had to be given. Nurses and orderlies must know exactly what to do. Three long deep baths on wheels were used. Temperature taken every two hours when awake. It is upon the control of the temperature that the success of this treatment depends. The sick orderlies worked very well. The patient was lifted in his sheet by six orderlies into the bath at foot of bed. Patient was gently lowered in and sheet wrapped round him. Patient lay back comfortably on a water pillow. In from fifteen to twenty minutes temperature usually fell to 101° or 100°; then patient was taken out, laid on a Mackintosh sheet and dried. Next he was given quinine grs. x. and some brandy, and frequently he fell into a refreshing sleep. As a rule, the bath sufficed to keep the temperature down for three or four hours when the bath had to be repeated. Captain Newland soon found that the shivering and blueness produced by the bath was unavoidable and not harmful. The sick soldier learnt to value the bath and used to beg for it. In cases where the blueness and shivering continued Newland altered the treatment and gave the graduated bath from 90° to 60°F. In a certain proportion hyperpyrexia came on in spite of baths, so the wet and ice pack was used instead. Such cases were first put in the cold bath and on return to bed were kept in a wet pack. Captain Newland rightly claims that he has given the cold bath treatment a fair trial and with fair success. He has not found it get rid of complications so much as Brand and Hare claim. Nevertheless 17 per cent., or say a saving of six or seven lives in every hundred enteric fever cases, is not to be despised. Captain Newland very properly lays stress on the necessity for thoroughness, once a day to plunge a man into a cold bath is no good, the whole principle lies in the attempt to control the damage done by high fever by never allowing it to rise above a fixed point.

Peritonitis as a Complication.—This includes both localised and general peritonitis. Tympanitis is often diagnosed when there is really peritonitis; pain, tenderness, hiccup and vomiting point to peritonitis. Newland thinks it more common than the text-books teach; it frequently arises, he says, from extension through the intestinal coat. There was only one perforation out of the 141 cases in the Quetta outbreak. Peritonitis is most common, late in third week. Opium

is the sheet anchor. Dieting, Newland says, is the way to prevent it. To order five or six pints of milk with aerated water *ad libitum* is a practice to be strongly condemned.

Intestinal Hæmorrhage.—Under this are included cases with the slightest trace of blood. Newland believes there are two periods of hæmorrhage (1) early; small isolated bleedings which do not produce collapse, due to capillary oozing from congested mucous membrane; (2) late, and a frequent cause of death, from a vessel eroded by the ulceration or separation of a slough. Newland has not found (as has been said) that persistent headache indicates coming hæmorrhage. He gave opium and turpentine to all cases showing distension and excessive diarrhoea. Opium for the hæmorrhage and hypodermics of strychnine for the collapse are recommended.

Enteric Liver Abscess.—Captain Newland in the report quoted has something to say on the formation of liver abscess in the course of enteric fever. It is rare; Newland had one case in 1896 and one in 1897. In a large number of cases of enteric fever the ulceration is not confined to the small intestine, but (as we wrote last month of typhoid in Brisbane) *the solitary glands of the large intestine are also enlarged and ulcerated*. In one case noted the soldier had neither had malaria nor dysentery and had only been twenty-one months in India. The most serious complications of enteric in this Quetta outbreak were pneumonia 7 per cent, peritonitis 19 per cent, intestinal hæmorrhage 17 per cent. Peritonitis was the most frequent, but intestinal hæmorrhage the most fatal. Pneumonia is a common disease in Quetta, in some cases Newland states that the two diseases ran a separate course, the pneumonia ended by crisis and a fall of temperature, then the enteric continued. Such cases suggest a combined infection of the pneumococcus and Eberth's bacillus.

In this Quetta epidemic *rose spots* were frequent and well marked (80 per cent.). Constipation was not uncommon. Delirium and head symptoms rare, which is attributed to the cold water treatment. Captain Newland may be congratulated on an admirable clinical report on this outbreak, and his success with the cold water should stimulate others to try it on a large scale. A word may be added; the water-supply of Quetta (where much enteric still prevails) is "*almost as perfect as it is possible to conceive*," it is brought to Quetta from a distance of thirteen miles from a pure source among uninhabited mountains 1,400 feet above Quetta. Nevertheless Mr. Hankin finds the enteric bacillus and hence contamination somehow must be conceived. The pendulum just now is swinging strongly back from the "water-borne theory"; in many Indian outbreaks contamination of the water cannot be shown. Ambulant cases serve to keep up an epidemic, and flies are mentioned by Newland as possible vehicles of infection. Flies and mosquitos have many sins to answer for now-a-days.

The Lee-Metford Bullet.—In his surgical history of the Tirah Campaign Lieutenant-Colonel H. R. Whitehead, F.R.C.S. (Eng), R.A.M.C. (A. M. D. Report for 1897, p. 459), writes as follows on this vexed question: "In the Dum-Dum bullet the soft lead core is exposed; on impact the bullet expands or 'sets up' as it is technically called, and the injury caused by the bullet is enormous, wounds of the most terrible description being produced. The shock caused is also very great. Whether the bullet always sets up in this way is questionable. In one case in the present campaign a Dum-Dum bullet fired by the enemy passed through the chest of a soldier and was extracted just on the second rib in front. In this case the bullet, which was declared by experts to be undoubtedly a Dum-Dum bullet, had not expanded. It is probable that the range was a very long one, otherwise the bullet would not have lodged. In another case a bullet entered a tent, rolled up on a

mule, and though it nearly penetrated the roll it was unaltered in shape. Although we had no opportunity of seeing the enemy's dead and wounded, private information received was that the wounds inflicted by our troops with this bullet were very severe."

We need not here quote the admirable article by Professor Ogston on this subject in the *British Medical Journal*, p. 279 (July 29th, 1899) as all will have read it.

Conservative Surgery.—Lieutenant-Colonel Whitehead also writes: "There seems to be no doubt that conservative surgery should be attempted in gunshot wounds of the shaft of the humerus. The wound should be explored and all loose fragments removed. The operation of excision of the ends of the shaft of the humerus has altogether fallen into disrepute. If the wound remains aseptic the fragments readily join, and if secondary amputation is ultimately required the results are extremely favourable. The only indications for amputation seem to be wound of the main artery or nerves with extensive fracturing of the bone (*loc. cit.*, p. 467).

The Aix-La-Chapelle Treatment of Syphilis.

—Major W. Dick, R.A.M.C., gives an interesting account of the methods employed at Aix-La-Chapelle in the treatment of syphilis (A. M. D. Report, 1897). The Aachen treatment is of two kinds, viz.: Regimen and medicinal. 1st Regimen.—This is the use of alkaline hot sulphur waters. The alkalies are chlorides, sulphates and sulphides of sodium. The taste and smell of the water is distinctly sulphurous, the temperature 115° F. There are no public charitable institutions. The hotels are also bath houses. Cooled spring water is used to cool the bath-water. No ordinary water is ever added. The sulphur water is also drunk. The patients drink three glasses (1½ pints) each morning and then take an hour's exercise. More water is drunk in the afternoon. Dinner is at 6 or 7 P.M. The baths are of all kinds. The medicinal treatment is in addition to the water-drinking. It is the **inunction of mercury ointment** to a much further extent than is usual in England. The rubbers are experts. Although these rubbers rub seven or eight patients daily they never seem themselves to get mercurialised. The inunction takes place over the whole body except the head, face, hands and feet. A roll of ointment of three grammes (i.e., sixteen grains of pure Hg.) is rubbed into the calves steadily for twenty minutes. This ointment after rubbing remains on the legs until the bath is taken the next day. Next day the thighs are rubbed; then the back, chest and arms day by day, so that in five days the whole body is rubbed. The patient wears cheap under-clothing. The usual length of treatment is about seven weeks. If only a shorter period can be spared then ten grammes daily are rubbed in.

The absence of mercurialism symptoms is said to be due to the use of the sulphur water by which an insoluble sulphite of Hg. is formed and excreted by the intestines. Nevertheless very stringent care is taken of the mouth. The patients carry about bottles of alum astringent mouth-wash and constantly are seen rising their mouths. Various tooth-powders are used also. Should any trace of mercurialism appear, treatment is stopped for a few days. Generous diet, plenty of exercise along with the drinking of the sulphur water, and the inunctions constitute the 'cure.' In cases, however, with rupia, etc., inunction is not so carried out. Hypodermic injections of calomel in paraffin oil into the muscular mass of the buttock is used instead (calomel 5 to 10 per cent. in paraffin oil, half a gramme to be injected every eight days). Local applications of strong solutions of pure chromic acid was used for treatment of secondary sores and ulcers. Major Dick recommends the method for treatment of soldiers, the only difficulty would be to persuade the soldier that attention to details was absolutely essential.

W. J. B.

OBSTETRICS AND GYNÆCOLOGY.

Diagnostic Value of Pain in Gynæcology.—

Lormer, of Germany, in an important communication on the above subject, shows how frequently the pain experienced in the female genitals is but the expression of latent hysteria. He has also proved by his examinations, observations and therapeutic measures the importance of the rôle played by hysteria, even with organic changes in the genitals and how important its early recognition may be. To distinguish genuine from hysterical pain is very difficult. Many patients complain of pain in the ovarian region, in which examination reveals nothing. Again, pain has been relieved by the application of a weak anodal galvanic current. Many patients are sensitive on one side of the body. During massage it has been found that the pain the patient complained of was not deep-seated but in the skin. Simply pinching the skin to the right or left or pricking it with a needle cleared the case, and showed that, though there co-existed accidentally a retroflexion or a tubal affection of the same side, the pain in the skin was entirely independent of it.

Dr. Lormer distinguishes several degrees in hysteria. (1) The very widespread hysterical disposition—normal hysteria. The hysteria is here latent and remains so possibly throughout life. Without looking for *stigmata*, no one could classify them in the hysterical class. (2) To this may be added one or more *agents provocateurs*, such as trauma, fright, infectious or debilitating diseases, hæmorrhage, chlorosis, diseases of the sexual organs, &c. In this way we get the picture of hysteria as seen by the older physicians. To us, gynæcologists, the effect of excessive hæmorrhage is of special importance. The anæsthesias and hyperæsthesias are more pronounced. We also find the first appearance of hysterogenetic zones (cephalalgia, epigastralgia, pleuralgia, sacrodynia). (3) The so-called grand hysteria.

Out of this entire picture of hysteria, the hyperæsthetic zones of the abdominal walls are of especial interest to us, and this more so the fewer other symptoms of hysteria are present. As these pains occur in women who are ordinarily not supposed to be hysterical, they lead to false interpretations, the sensitiveness being attributed to the underlying organs and thus leading us to propose useless and dangerous operations.

The author then enumerated illustrative cases in which (1) there was no gynæcological disease that could be brought in relation with the pain; (2) cases in which laparotomy was performed for the relief of pain, because of the coincidence of pathological changes in the pelvic organs, but in none of these has the object of the operation been attained. Had the patients been examined for *stigmata* prior to the operation, the prognosis as to the relief of pain would have been more guardedly given and possibly the idea of operation would have been abandoned; (3) cases in which gynæcological lesions are present, that are in direct relation to the pain. Though the connection between local disease and hysterical pain is frequently not a direct one, but it may be indirect in that the local suffering is a provoking agent for true hysteria. By removing the local trouble the patient profits, even if the hyperæsthetic area continues. The main object of the paper is to call attention to the importance of these hyperæsthesias, so that we may not interpret them falsely or be led by their presence to renewed gynæcological treatment.

The author then gives his personal experience of the treatment of these hyperæsthesias of the abdominal walls.

(1) Very weak galvanic currents are of value. A stronger current irritates and increases the pain. Success depends on the sedative action of the anode. Almost all hyperæsthetic areas are comparatively anæsthetic to the galvanic

current. The currents used are so weak that the patient can hardly feel them or does not feel them at all. The suggestive factor is therefore absent. Cases have been cured where the current was not used as a remedial agent but was employed in the same way under the pretence of using it in order to examine the nerves. The hysterical zones lose their temporary irritability if the patient is put on an isolated stool and is allowed to be under the influence of static electricity for some time. It must be admitted that in these treatments the influence of suggestion cannot be excluded.

(2) "Suggestion."

(3) Removal from home and family and treatment in an institution.

(4) *Drugs*—Iron combined with quinine and nuxvomica alternated with syrup of the hypophosphites. Valerian and assafoetida are useful in convulsive form.—*American Journal of Obstetrics*, April 1899.

Cause and Significance of Uterine Hæmorrhage in Myoma Uteri.—J. G. Clark is convinced that the increased menstrual flow and atypical hæmorrhages which are so frequently associated with these cases are dependent solely upon mechanical conditions, which induce first congestion of the deeper seated muscular and endometrial vessels and this in turn an increased or prolonged menstrual flow, and second, an actual derangement or disorganization of the vascular system of the endometrium and of the tumor itself. As the tumor increases in size, it tends to grow in the line of least resistance, either outward becoming subperitoneal or inward becoming submucous. With the outward mobilization of the tumor, the tendency to a disturbance of the circulation decreases. In the quiescent state, during the intermenstrual period, the vascular system around the tumor is only partly filled. In the increasing congestion of the uterus, incident to the menstrual cycle, the arteries tend to resist the surrounding pressure and maintain their flow, whereas the veins may become compressed against the tumor and, as a result, a venous stasis in the deeper-lying tissue occurs, with a consequent increased and prolonged menstrual period. While the blood vessels near the tumor may be partially blocked, the anastomoses within the uterus are so perfect as to leave open many easy avenues of escape for the venous blood. Therefore, even a decided increase, without further derangement in the menstrual flow, is the exception rather than the rule, unless there is infringement of the tumor on the endometrium. When the tumor reaches the mucosa, the menses tend to become free and prolonged, due to a thinning of the mucosa and a degeneration of the vessels, which renders the usual diapedesis much easier or gives rise to an escape of blood, through actual rupture of capillaries. As the mucosa degenerates from the attachment of the tumor there is left a zone of mucosa around its base, from this zone active oozing may take place. When the tumor becomes necrotic, the vessels become necrotic also and are rendered brittle, so that they are liable to rupture and give rise to marked hæmorrhage.—*Johns Hopkins Hosp. Bull.*, March 1899.

Early Diagnosis of Cancer of Uterus.—

Heitzmann emphasizes the fact that pain, metrorrhagia and foul discharge are late symptoms of malignant disease of the uterus, which often mark the inoperable stage. Hence the necessity of recognising the presence of carcinoma before these appear. He calls attention to an important aid to diagnosis which he published 20 years ago. If a pledget of cotton soaked in a 10 per cent. solution of sulphate of copper be applied for a minute or two to a suspicious erosion of the portio vaginalis, the surface will become quite blanched if it is a mere ectropion. If it is a simple erosion, a thin bluish white-coating will form, without hæmorrhage. By repeating the applications at intervals of three or four days the erosion will be entirely healed at the end of a fortnight

by the ingrowth of squamous epithelium from the periphery of the raw surfaces.

In the case of a cancerous ulcer on the contrary, a light application of the solution of copper will cause bleeding which can be checked by ferripyrene or perchloride of iron. A few days later the application is repeated. If the erosion diminishes in size, becomes less hyperæmic, and is surrounded by a pale ring of newly-formed pavement epithelium, the suspicion of malignancy was unfounded. Should the erosion again bleed more freely than before, the diagnosis of incipient carcinoma may be regarded as practically certain. In order to confirm the diagnosis, additional applications may be made, the persistence of a single bleeding spot after the rest of the raw surface has healed is sufficient to establish the fact of malignancy.

At this stage amputation of the cervix will, in the majority of cases, result in a permanent cure. When cancer of the endometrium is suspected, a sound should be introduced and swept quietly around the interior of the uterus, in order to detect prominences or diseased portions of the lining membrane. If no bleeding follows its withdrawal, the case is probably one of simple hyperplastic endometritis. If bleeding occurs, an applicator wrapped with cotton saturated with the solution of copper is carried into the uterus. The bleeding will at once cease if the condition is benign, and a few applications will effect a cure. If the hæmorrhage is increased at each application the existence of cancer should be suspected and the curette used to confirm the diagnosis.—*Amer. Journ. of Med. Scien.*, May 1899.

K. DAS, M.D.

Correspondence.

A DISCLAIMER.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In a leading article, *The Prophylactic Issue of Quinine*, in the "INDIAN MEDICAL GAZETTE" for September, I find the following statement:—

"Major Tull Walsh at Berhampur stopped the issue of the drug after a ten days' trial, believing it to be causing bowel-complaints."

A more misleading and incorrect statement would hardly be possible, but I find that you are not responsible for anything except the italics. The statement occurs in the report of the Inspector-General of Jails, but it is difficult to see how he came to make such a mistake. The report from the Berhampur Jail is as follows: "The sulphate of cinchonidine [not quinine] was issued as a prophylactic against malarial fevers to all prisoners (daily average 208-18) at about 11-30 A.M. just after their midday meal from the 18th to 28th June 1898, and then it was stopped when it was suspected of causing bowel-complaints."

I did not take over charge of the Berhampur Jail until the 1st July, 1898, and beyond the fact that I know that the issue of cinchonidine had been stopped, I took no further interest in the matter. Theoretically the daily consumption of cinchona alkaloids might be expected to check the number of attacks of malarial fever, but there is no proof that such is the case. On the coast of West Africa quinine is consumed in enormous quantities as a prophylactic, but I never heard that the majority of quinine eaters escape from attacks of malarial fever. I believe I am right in saying that you, Sir, in 1898 collected the opinions of Jail medical officers as to the value of cinchona alkaloids as prophylactics. Would you tell us the result of your examination of the evidence before you? My views are of a negative kind with a verdict of 'non proven.' As regards the possibility that the use of cinchona alkaloids taken regularly may cause intestinal irritation, and even diarrhoea in individuals, there is ample evidence; but I do not think that cinchonidine was altogether the cause of the bowel-complaints in the Berhampur Jail. I was of opinion that there was too much pumpkin in the diet. In a healthy jail like that of Berhampur slight increase in any disease is soon noticed. With the necessary alteration of the vegetable diet the cases decreased.

Yours,
J. H. TULL WALSH,
Major, I. M. S.

BERHAMPUR,
6th September 1899. }

[We gladly publish Major Walsh's disclaimer: our remarks were copied from the Annual Administration Report on Bengal Jails, where this

action is attributed, incorrectly, to Major Walsh, instead of to his predecessor in the Civil Surgeoncy of Berhampur, an officer now on furlough. As regards the collective Editor, referred to in Major Walsh's year's B. M. Association meeting, and the *Journal of Tropical Medicine*, March 1899. Out of fifty-one medical officers who kindly replied to the queries, forty-seven reported favourably of the prophylactic issue of quinine or other preparation of cinchona. Four said they could see no appreciable difference in the health of prisoners whether quinine was administered or not. The others agreed that even when the number of fever cases were not lessened yet undoubtedly the good effect was shown in the lessening of the severity of the cases admitted. This was also the present writer's experience during a bad fever season in Buxar in 1897. In the same paper Lt.-Col. D. P. Macdonald's figures were quoted. Colonel Macdonald made control experiments on a very large scale in the Penal Settlements in the Andamans, but they were not conclusive. The question is, we think, important, and we shall be glad to publish the views of other medical men. Lieut.-Col. French Mullen in this issue gives his reasons for believing that the issue of quinine, &c., to healthy persons does more harm than good.—Ed., I. M. G.]

Service Notes.

THE SERVICE EXAMINATIONS.

THE following are lists of Surgeons on probation who were successful at the London and Netley Examinations, and who have been recommended for commissions as Lieutenants:—

ROYAL ARMY MEDICAL CORPS.*

JULY 29TH, 1899.

Combined Marks.		Combined Marks.	
F. J. J. Palmer	4953	H. F. Hart	3996
G. H. Irvine	4926	A. L. A. Webb	3946
R. A. Cunningham	4925	S. G. Butler	3903
V. G. Crawford	4611	L. F. Forbes Winslow	3901
G. G. Delap	4695	J. J. W. Prescott	3873
O. Challis	4476	P. H. Falkner	3778
W. A. Woodside	3353	H. E. M. Douglas	3718
H. Simson	3345	E. E. Ellery	3647
H. H. Norman	3320	O. W. A. Eisner	3631
W. R. Blackwell	3270	J. W. Langstaff	3616
H. M. Nicholls	4105	J. I. W. Morris	3558
H. B. Onraet	4026	E. T. Inkson	3496
A. Chopping	4015	A. A. Seeds	3456

INDIAN MEDICAL SERVICE.*

JULY 29TH, 1899.

Combined Marks.			Combined Marks.		
E. D. W. Greig .. ..	..	6269	W. H. Dickinson .. ..	..	4619
C. Dykes .. ..	..	6146	M. W. Manuk .. ..	..	4600
W. E. McKeon .. ..	..	6019	W. H. Tucker .. ..	..	4552
W. F. Harvey .. ..	..	5998	A. W. Tuke .. ..	..	4544
W. C. H. Forster .. ..	..	5900	C. S. Lawson .. ..	..	4500
J. J. Urwin .. ..	..	5770	J. H. L. Beaman .. ..	..	4324
D. McCay .. ..	..	5766	J. Sloan .. ..	..	4054
A. B. Fry .. ..	..	5171	G. H. Stewart .. ..	..	4003
H. D. Peile .. ..	..	5117	D. N. Anderson .. ..	..	3995
D. H. F. Cowin .. ..	..	5107	M. N. Chaudhuri .. ..	..	3618
E. C. d. Maddock .. ..	..	5041			

NOMINATED SURGEONS ON PROBATION.†

		Netley			Netley
		Marks.			Marks.
H. S. Anderson	..	2385	E. L. Munn	..	1938
H. Ensor	..	2342	T. C. Mackenzie	..	1472
L. N. Lloyd	..	2040	E. P. Connolly	..	1458
L. Wood	..	2003	J. H. R. Bond	..	1442

THE LATE SURGEON-GENERAL W. C. MACLEAN.

A HANDSOME tablet has recently been placed in the Chapel at Netley in memory of Surgeon-General W. C. Maclean, C.B., Q.H.S., I.M.S.

* The final positions of these gentlemen are determined by the marks gained in London added to those gained at Netley, and the combined numbers are accordingly shown in the lists.

† The positions of these gentlemen are determined by the marks gained at Netley.

RAI KANNY LALL DEY BAHADUR, C.I.E.

WE regret to learn of the death of Dr. Kanny Lall Dey, the author of a well-known work—"The Indigenous Drugs of India." He was an Examiner in Medical Jurisprudence and Chemistry in the Calcutta University. He retired from Government Service in 1884.

LIEUTENANT-COLONEL CHARLES LITTLE, M.D., M. Ch., I.M.S., for many years Staff Surgeon, Secunderabad, has been appointed to succeed Colonel Sinclair as Chief of the Civil Medical Department, Burma.

"THE BEST GRADUATES OF THE MEDICAL SCHOOLS."

Appropos of Professor Ogston's address on the needs of the Navy and Army Medical Services, it will be remembered that he excepted the INDIAN MEDICAL SERVICE from his strictures, and stated that it "still continued to obtain the best graduates of the medical schools." We have thought it worth while to see how far this was true, and have here noted the special distinctions and previous appointments held by men who have entered the I. M. S. within the past four years of army medical agitation. We took the names from the last army list, and the special qualifications from the 1898 edition of Churchill's Medical Directory. We need not mention names, but we find the following: a Medallist and Medical Tutor, Bristol; a House Physician and Assistant Medical Officer of a Fever Hospital; a House Surgeon at Barts and at Salop Infirmary; a Charing Cross House Surgeon; a House Surgeon and Physician at Liverpool; an Honorman and House Surgeon in Manchester; an Obstetrical Assistant at Barts.; a Gold Medallist, Prizeman and House Surgeon, Dublin; a House Surgeon and Demonstrator in Anatomy at Sheffield; a B. A. (Cantab.), Natural Science Tripos with many prizes and House Surgeoncies at two hospitals; a first class Honorman, House Physician and Surgeon in two hospitals, Manchester; a Prizeman, House Surgeon and Demonstrator in Anatomy, Edinburgh; a House Surgeon and Anaesthetist at St Mary's; a Demonstrator in Anatomy; a Scholar in Natural Science; a House Surgeon at King's College Hospital; an F.R.C.S., House Surgeon and Prizeman, London; a Prizeman, with honors, House Surgeoncy and Demonstratorship in Anatomy, Glasgow; a Clinical Assistant at Guy's and Westminster Ophthalmic Hospitals; an Honorman, Prizeman, Demonstrator in Anatomy and Bacteriology at St. Mary's with M. D. (Lond.), and F.R.C.S.; a Clinical Assistant for Throat Department at St. Thomas'; a Gold Medallist, University College, Liverpool; a House Physician and House Surgeon and Demonstrator in Anatomy and Pathology and Prosecutor at the Royal College of Surgeons, London; a House Surgeon, Manchester Royal Infirmary, and Chest Hospital; a Clinical Assistant at St. Thomas'; a House Surgeon and Physician at the Metropolitan Hospital; a senior and junior scholar in science at Barts.; a House Surgeon and Physician. Demonstrator in Physiology, Clinical, Obstetric and Ophthalmic Assistant at St. Mary's; a House Surgeon at Bristol; a Clinical assistant at Edinburgh; a Clinical Assistant at Barts.; a House Physician at Edinburgh; a first class Honorman, Edinburgh; a House Surgeon at Cheltenham M. D., B. S., London, F.R.C.S., and House Physician and Midwifery Assistant at Barts.; a Demonstrator in Pathology and Physiology at Edinburgh; a Resident Surgeon, Dublin, with special certificate, Rotunda; a Clinical Assistant, Moorfield's; a senior House Surgeon, Dundee; an F. R. C. S.; a House Surgeon and Obstetrical Assistant, University College; a Prizeman and Honorman at Leeds; a House Surgeon at Cork; a House Surgeon at Charing Cross; a Clinical Assistant at St. Thomas'; a House Physician and Obstetric Assistant at Charing Cross; and several more F. R. C. S. men. As long as a service attracts from the schools men of this class, it need not despair, and, in Surgeon-General Harvey's words "it is as good as ever it was."

WE understand that the period allowed for officers to avail themselves of "Tirah leave" will expire in November.

WE note the following I. M. S. men as having attended the B. M. A. meeting at Portsmouth: Colonel K. McLeod (Vice-president of the Tropical section), Major G. Giles, Captain G. Lamb, Surgeon-Major A. S. Faulkner (retd.), Major R. H. Castor, Deputy Surgeon-General Cayley (retd.), Lieutenant-Colonel A. H. C. Dane, Lieutenant-Colonel Drake-Brockman (retd.), Lieutenant-Colonel G. A. Emerson, Surgeon-General R. Harvey, Surgeon-Major W. Niven, Lieutenant-Colonel B. O'Brien, Major F. S. Peck and Captain J. Penny.

MAJOR RONALD ROSS' retirement from the service is gazetted from 31st July.

BRIGADE-SURGEON G. Y. HUNTER, I.M.S., died on August 11th, in his 69th year. He was for many years Civil Surgeon of Karachi, and had been Surgeon to the J. J. Hospital, Bombay. He retired in 1888. He served in the Abyssinian War.

WE regret to learn of the sudden death of Brigade-Surgeon-Lieutenant-Colonel C. J. W. Meadows, I.M.S., on August 2nd. He only recently retired. Lieutenant-Colonel Meadows was well known in Bengal as Civil Surgeon of Berhampur and Cuttack.

Of the ten prizes given at last session at Netley no less than nine were carried off by men in the I. M. S.

CAPTAIN P. W. O'GORMAN, I.M.S., D. P. H. (Cantab), has recently taken the M. D. of Brussels.

THE article by Lieutenant-Colonel McCartie, I.M.S., on "The soldiers' dress and heat apoplexy" in our issue for June, has been the subject of two leading articles in American medical papers, and has been very freely quoted from in many exchanges. It is an open secret that Lieutenant-Colonel McCartie is "M. Ch.", the author of the article in *Journal of United Service Institution of India*, which has attracted so much attention in the Press in India.

ACCORDING to our contemporary, the *United Service Gazette*, the time has come for Medical Officers of the Royal Navy to commence an agitation for command and rank and "autonomy within their own service and department."

THE *Boston Medical and Surgical Journal* of August 3rd has an editorial urging the necessity of establishing a school of tropical medicine for medical men who may practice in the newly acquired colonies.

A revised edition of the Field Service Manual for the Medical Department of the Army (Home) has been approved and issued.

A NEW Edition of that invaluable volume Lyons' "Medical Jurisprudence for India," will shortly be issued under the editorship of Major L. A. Waddell, LL.D., I.M.S.

THE late Surgeon-Major E. D'A. Evezard, who died recently in his seventieth year, belonged to the Madras Medical Service. He was the author of "A Treatise on Beri-beri," and a "Topographical Account of Mergui" and numerous articles in the Medical Press.

THE United States Consul at Mauritius, in his report to his Home Government, gives a lively account of the excitement caused by the outbreak of plague in the Island of Mauritius. The members of the Council will not believe the evidence of the "expert doctor" and the Board of Health, and accuse the whole medical staff of the Colony of incompetence, &c. The "expert doctor brought from India at great expense" is Captain J. S. Stevenson, I.M.S., a St. Barts' man. Up to July 20th. there have only been 30 plague cases in the island. Lieutenant-Colonel E. Cretin, F.R.C.S., I.M.S., is also in the Mauritius in medical charge of the 1st Bengal Infantry.

Gazette Notifications.

PUNJAB.

Major D. T. LANE, I.M.S., appointed Civil Surgeon of Amritsar from 29th July.

Captain C. H. JAMES to act as Civil Surgeon, Kangra. Major J. R. ADIE is posted to Peshawar as Civil Surgeon. The services of Captain E. WILKINSON, F.R.C.S., I.M.S., are placed permanently with Punjab.

The services of Captain A. W. T. BUIST and of Captain H. SMITH, I.M.S., are placed permanently with the Punjab.

ASSAM.

Major E. A. W. HALL to Assam permanently, and confirmed as Civil Surgeon of Darrang.

N.-W. P. AND OUDH.

Dr. E. J. SIMPSON to hold civil medical charge of Rae Bareilly District. Major ERNEST HUDSON, F.R.C.S., I.M.S., is permitted to return to duty.

CENTRAL PROVINCES.

Captain W. HENVEY, I.M.S., to act as Superintendent, Central Jail, Raipur, cancelling order of 13th July 1899.

Captain P. F. CHAPMAN to act as Civil Surgeon of Seoni.

FOREIGN DEPARTMENT.

Major W. H. B. ROBINSON, I.M.S., is allowed special war leave from 20th August.

Lieutenant-Colonel J. CROFTS, I.M.S., is granted privilege leave (1 month and 20 days) from August 20th.

BOMBAY.

Lieutenant F. D. BROWNE and Captain C. I. HENDLEY are lent to Bombay for plague duty.

THERAPEUTIC NOTES.

The Prevention of Insect Bites.—The following lotion is excellent for the prevention of the bites of mosquitoes, gnats, and harvest bugs:—

R̄ Hyd. Perchlor. ...	...	...	gr. ii
Spt. Chloroformi ...	...	...	oz. i
Spt. Camphoræ ...	...	...	„ i
Aquæ ...	...	...	„ iv

Oil of lavender, or other aromatic essential oil, is used with the same view.—*Practitioner*.

Whooping-Cough.—Burney Yeo gives sodium benzoate internally in combination with sodium bicarbonate and ammonium chloride; this mixture exerts a very favourable effect on the paroxysms of cough, and renders the expectoration less tenacious and more fluid. The following is the formula he uses:—

R̄ Sodii Benzoatis ...	...	...	72 grs.
Sodii Bicarb-natis ...	...	...	48 „
Ammonii Chlor. ...	...	...	24 „
Aquæ Chloroformi ...	...	...	1 oz.
Aquæ Anisi ...	...	...	ad 3 „

Mf. mist. One to four teaspoonfuls, according to the age of the child, in a little hot milk, every four hours.

The following formula has been suggested in the treatment of whooping-cough:—

R̄ Guaiacol ...	...	...	1 part.
Eucalyptol ...	...	...	1 „
Sterilised Olive Oil ...	...	...	10 parts.

Of which 2·5 c.c (40 minims) are to be injected subcutaneously each day.

The Treatment of Hepatitis.—Mr. James Cantlie states that the first essential is rest, and the object of this is to prevent the diaphragm moving over the top of the liver. The patient must be placed in the horizontal position. To fix the lower part of the chest, strapping is an excellent means. Hot fomentations, or a very large poultice changed every three hours, are useful. Local application of nitro-hydrochloric acid is a favorite remedy; it is thought that baths of this do not possess any specific virtue. As for food, milk is admissible only in the form of whey; starchy foods must be withheld, while animal food in its most digestible form is the keynote of successful dieting. Only enough to support life ought to be given, so long as acute symptoms remain. Raw-meat juice, raw meat itself, chicken-soup, and weak beef-tea should form the elements of diet. As drinks, hot water and weak, freshly-made tea with lemon are the best. As the acute symptoms subside, the “meat” nourishment may be increased, and the first starchy food to be administered ought to be well-steamed rice. To clean out the bowels calomel is the best drug to use; three grains given on an empty stomach is the best form. If the bowels are not freely moved after twelve hours have passed, sodium sulphate, the effervescent salt, a half ounce in a small quantity of water, is recommended. Acids and alkalies should be avoided. Ammonium chloride in twenty-grain doses, either alone or in combination with potassium iodide, and bromide may be made into a mixture in conjunction with taraxacum. When pus is suspected, aspirate, tap, and drain. The danger to the lung or diaphragm from tapping should not be considered.—*The Clinical Journal*, 1898, No. 295, p. 161.

Apocynum Cannabinum: “The Vegetable Trocar.”—This drug, which has been used for many years by the American Indians, has been employed at several periods in medicine, but owing to confusion in identifying the plant, and to inert preparations from inactive species, has not attained to general use.

Apocynum cannabinum is the most powerful indirect diuretic known, and herein lies its great value in dropsies; and to its diuretic action alone is due the invigorating effect of this remedy.

Ascitic fluid, as is well known, is highly albuminous; hence tapping a patient is practically equivalent to bleeding him, and the greater the amount of fluid removed, the greater the resultant weakness. Dropsical patients literally feed on the albuminoids contained in their closed cavities, and rapidly fail after several tapings. Purgatives act similarly by removing the albumen with the water; but, when the ascitic fluid is forced through the renal filtering plant, the albumen is halted and thrown back into the circulation, and the water alone is allowed to escape, thereby relieving the dropsy and feeding the patient, who has been slowly bleeding to death into one or more of his closed cavities. Hence it is that patients taking this medicine rapidly gain in strength in spite of its depleting effects. The appetite is usually rendered sharp, and this, coupled with the reabsorption of albumen, accounts for the rapid results so often obtained. It is not uncommon for a patient suffering from general anasarca to pass one or two gallons of urine daily until the fluid is all removed.

In his original paper, read before the New Orleans Medical and Surgical Association in December, 1880, Dr. Dabney cites a series of cases (sixteen in number), including examples of cardiac, hepatic, and renal disease associated with extensive anasarca, in which tincture of apocynum was administered usually in 20 minim doses three times a day, with the happiest results, the dropsy

disappearing usually within four or five days, and when recurring later being equally favourably influenced by the drug.

Whether this remedy exerts any peculiar influence over Bright's disease or not, clinical facts do not allow us to state positively; but it is worthy of notice that, in almost every instance where it was administered in that affection, marked diminution of albuminuria and of tube-casts occurred, and in some cases every trace of both disappeared. The following advantages, however, possessed by apocynum should commend it to all physicians:—

1. The small quantity required to produce free diuresis, emesis, or catharsis.
2. Its pleasant aromatic taste.
3. Its tonic properties, which compensate for the depression consequent on free catharsis.
4. Its harmlessness—an overdose being speedily followed by free emesis.

With this remedy at our command, paracentesis will be, in most cases, unnecessary.

Physiological Action.—Dr. J. Rose Bradford has conducted a series of experiments to ascertain the physiological action of apocynum. Its principal action has been found to be on the heart. The heart of the dog was slowed down to two beats to one respiration, and even as low as three beats to two respirations. It will thus be seen that it is far more powerful than digitalis. No such results have ever been obtained experimentally from the use of digitalis, for the vagus becomes paralysed before this point is reached. Clinically it has been found to regulate in a marked manner the action of the irregular heart; but it does not slow the normal heart. Its action on the arteries differs from that of digitalis, as is shown by changes in the blood-pressure. It causes no contraction of the arteries, hence no increase in blood-pressure. It, therefore, resembles strophanthus rather than digitalis in this respect.—*Treatment*.

[In a country where tapping for ascites is so commonly done as in India, a drug like the above promises to be useful. It is the *Canadian hemp* (Whitla).—Ed., *I. M. G.*]

CORRIGENDA.

In Captain Earle's article, p. 323, line 5, insert comma instead of fullstop and small 's' to Since. In line 29, substitute 'its' for 'the.' On p. 329, line 12, read 'was' for 'were.' On p. 330, line 21, add 'native' before patients.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the *Indian Medical Gazette* Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

The Sanitary Commissioner's Report, Bengal.
The Triennial Report on Bengal Dispensaries.
The Punjab Vaccination Report.
The Proceedings of Madras Sanitary Commissioner
The Sanitary Commissioner's Report, Madras.
The Madras Vaccination Report.
The Salt Department Report.
The Dufferin Hospital Report.
The Jeypore Medical Report.
Enlargement of the Prostate (2nd ed., H. K. Lewis) by Mansell Moullin.
The Skiagraphic Atlas. Hutchinsonson, H. K. Lewis.
Colonel G. Hall's Senile Cataract
Colonel G. Hall's Complications of Cataract Disease of Women in Bengal, by C. G. Bagchee.

COMMUNICATIONS RECEIVED FROM:—

Captain J. G. McNaught, R.A.M.C., Deolali; Captain H. M. Ertle, I.M.S., Calcutta; Captain R. H. Maddox, I.M.S., Chapra; Major L. A. Waddell, I.M.S., Calcutta; Major D. G. Crawford, I.M.S., Calcutta; Major Rennie, R.A.M.C., Meerut; Colonel T. H. Hendley, C.I.E., I.M.S., Darjeeling; Lieut.-Colonel McArtie, Chitral; Lieut.-Colonel French Mullen, I.M.S., Rampur Baulia; Manager, Pioneer Press; Major A. Buchanan, I.M.S., Nagpur; Major J. H. T. Walsh, Berhampur; Major F. F. Maynard, I.M.S., Patna; A. Neve, Esq., Kashmir; Captain R. Heard, I.M.S., I.M.S., Major W. Ronaldson Clark, I.M.S., Simla; Lieut.-Colonel E. J. Mardan; Major W. C. Bagchee, Calcutta; Major J. E. Lawrie, I.M.S., Hyderabad; Babu G. C. Bagchee, Calcutta; Major A. E. Pratt, I.M.S., Naini Tal; Major J. Shearer, I.M.S., Simla; Major A. E. Roberts, I.M.S., Simla; Lieut.-Colonel Maitland, I.M.S., Madras; Lieut.-Colonel W. K. Hatch, I.M.S., Bombay; Major Quicke, I.M.S., Bombay; Captain Macnab, Mardan.

Original Articles.

THE LAVERAN BODY IN BIRDS.

EXPERIMENTS PERFORMED ON BIRDS IN THE
TEMPORARY LABORATORY OF THE
HYDERABAD MEDICAL SCHOOL,

September 1898—September 1899. -

By E. LAWRIE, M.B., I.M.S.,

LIEUTENANT-COLONEL,

Residency Surgeon, Hyderabad (Deccan).

THE work in this section was carried out by Dr. N. Evans, assisted by Drs Mullanah and Syed Mahomed. The following facts were put together by Dr. Evans: and the photographs and drawings were made by Ram Chuuder, a student in the laboratory:—

The blood of ten different kinds of birds was examined for halteridia and proteosomata, the so-called malarial bodies peculiar to birds. The only difference between halteridium and proteosoma is that the halteridium is halter-shaped while the proteosoma is round. In other respects they are exactly alike,

were found. There is no necessity to continue to employ two names for bodies which are obviously different forms or shapes of one and the same thing, and in this report all will be spoken of indiscriminately as proteosoma. All the birds examined were apparently healthy.

The results were as follows:—

Number examined.

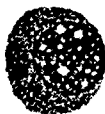
Sparrows	... 430.	Proteosoma found in ...	63 per cent.
Pigeons	... 50.	Proteosoma found in ...	100 per cent.
Crows	... 60.	Proteosoma found in ...	55 per cent.
Fowls	... 16.	Proteosoma found in ...	0 per cent.
Ducks	... 10.	Proteosoma found in ...	0 per cent.
Hawks	... 4.	Proteosoma found in ...	0 per cent.
Bottle Birds	... 4.	Proteosoma found in ...	0 per cent.
Doves	... 3.	Proteosoma found in ...	0 per cent.
Snipe	... 2.	Proteosoma found in ...	0 per cent.
Young Minas	16.	Proteosoma found in ...	0 per cent.

The blood of three squirrels and eleven rabbits was also examined, no proteosomata were found in the squirrels, but hyaline bodies were found in the red blood cells in four out of the eleven rabbits.

Of the sixty crows examined, proteosoma was found in the blood in seventeen on first examination and in sixteen more on further examination. In some cases it was not found until a third or fourth examination had been made. Three crows, whose blood did not contain proteosoma



Halteridium in the red blood cell of a crow.



Proteosoma, bulging the red cell.



Free Proteosoma, with nucleus of red cell.

and when seen free in the blood, that is, not contained in the red cell, they cannot be distinguished from each other. The difference in shape in the earlier stages is probably mechanical and may be due to the relative amount of elasticity in the red cell, and in the body inside it. If the red cell is more elastic, it will give and allow the body to remain circular, whereas if the reverse is the case, the proteosoma then

were inoculated with blood from a sparrow with proteosoma, and three other crows whose blood likewise did not contain proteosoma were kept uninoculated as controls. After two days proteosomata were found in two of the controls, which had not been inoculated, while in one a true rosette was found. Hyaline bodies were also found in one of the inoculated crows. Two days later proteosoma and flagellating



Proteosoma.



Hyaline body.



Flagellating body (Diagrammatic).



Rosette inside the elliptical blood cell of a crow (Drawing).



Rosette, free (Drawing).

has to adjust itself to the shape of the red cell and the situation of its nucleus, and becomes halter-shaped—hence halteridium. In all the birds in which intracorporeal bodies were found, both kinds—halteridia and proteosomata

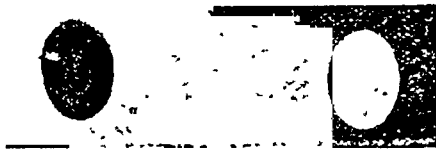
bodies were found in one, and proteosoma and rosettes in the other, of the uninoculated controls. Two rosettes were seen in this bird's blood, and were exactly like those found as Laveran bodies in human malarial blood.

Hyaline bodies were found in both the inoculated crows. Two indistinct rosettes, partially fused together, were seen in the second control crow (uninoculated) a few days later, and after



Indistinct rosette; and free nucleus of red blood cell (Drawing).

that the proteosomata diminished considerably in number, and no rosettes were seen again. For a few days no Laveran bodies were seen at all, and then a few hyaline bodies and small



15. Hyaline body.

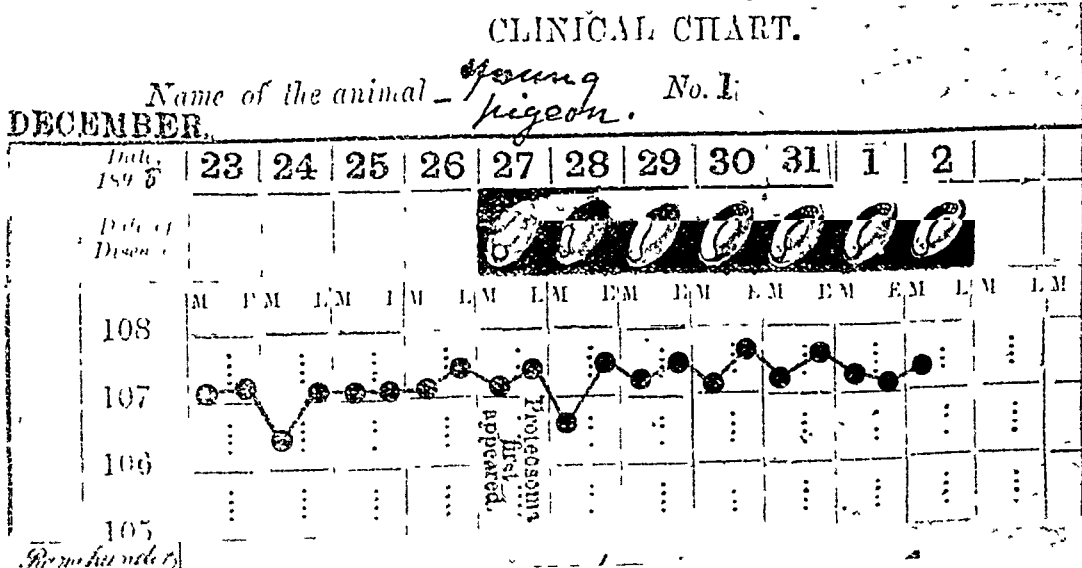
16. Small proteosoma.

proteosomata were found. In one control, and in one inoculated crow, proteosomata were never seen.

Two crows—one with proteosoma and one without—were given an injection of four minims of tincture of iodine into the liver. This was done to see what effect irritation of the liver had on the bodies in the blood. The latter

Six crows were killed and the spleens removed and weighed. No relation was found to exist between the size of the spleen as compared with the weight of the bird and the presence and numbers of proteosoma in the blood. In many cases temperature charts were kept. The temperature of the birds varied between 106° and 109° F. In a few cases it was as high as 112° F, but it bore no relation in any case either to the size of the spleen or to the presence or absence of proteosoma. The temperature is lower in young birds. Two sparrows without proteosoma were inoculated with blood from another sparrow with proteosoma. Two other sparrows—which had not proteosoma in the blood, were kept as controls. One of the inoculated sparrows died after two days; in the other hyaline bodies were seen on the fourth day after inoculation, and were present in the blood for two days, then disappeared, and were not seen again. One control died and the other had proteosoma in the blood on the tenth day and died the following day.

On the 3rd of October experiments were begun with young pigeons. It had been pointed out by Captain Johnston, I.M.S., that proteosoma is not found in the blood of young birds before they are fledged and leave the nest. The blood of several kinds of young birds was examined, and this important statement was confirmed. Four young unfledged pigeons were then reared in the laboratory and were examined from day to day, for the purpose of watching the development of proteosoma. Three of these were fed on grain and filtered water, the fourth was fed on grain and dirty pond water, with now and then a meal of crow's spleen, mos-



Specimen Temperature Chart.

crow died the day after the injection was given; the other lived for about three weeks. The proteosomata diminished in number, but did not disappear.

quitos, and pigeon's blood. It was also injected subcutaneously with the blood of a pigeon with proteosoma. This pigeon, and one of the other three died without developing proteosoma.

in the blood. In the other two proteosomata were found on the twenty-second day.

On October 29th, four more young unfledged pigeons were brought to the laboratory. Two of these were kept in a cage under a mosquito net and were fed on boiled grain and filtered water. The other two were also kept under a mosquito net, but were fed on boiled grain and water taken from a pond situated in a malarious district. All of these developed proteosoma in less than a month, one of those fed on dirty water being the first, and the other the last to develop them. Temperature charts were kept of the morning and evening temperature of the pigeons, and no change took place in the temperature with the appearance of proteosoma in the blood.

After this nineteen young pigeons were experimented upon at different times, and all were fed on boiled grain and filtered water. Thirteen were kept under mosquito nets and six were left exposed to the bites of mosquitos. Three out of the thirteen, and one out of the six died without developing proteosomata. All the others got them, in four they appeared rather quickly, in about a week, but these four were rather larger when brought than the others. In one pigeon proteosomata were not found for nearly two months, this was the longest time taken to develop them.

Since June 1899, twenty six more young pigeons have been experimented upon. Twelve were kept carefully under mosquito nets and were not bitten by mosquitos, and in five of them proteosoma were found after about a month. In two hyaline bodies only were found; both these pigeons died before proteosoma had time to develop. Five died within a month, and two are still living and up till now have not proteosoma in the blood. These have been in the laboratory for over two months, but are still comparatively young birds. Several of those kept under mosquito nets were examined

died two or three weeks later, no proteosoma were found in the blood. Eight young pigeons were injected with blood from a full-grown pigeon with proteosoma. One died after three weeks and the other seven developed proteosoma about a month after inoculation. The time taken for these pigeons to get proteosoma corresponded with that taken for proteosoma to appear in the other pigeons which were not inoculated, and the result cannot therefore be said to be due to inoculation. The spleen was removed from two full-grown pigeons to see what effect, if any, was produced on proteosoma in the blood. In one the proteosoma seemed to increase in numbers, but in the other no difference was observed. The pigeons did not appear to suffer in any way, and are both now alive and well. One full-grown pigeon had four minims of tincture of iodine injected into the liver without any effect on the proteosoma in the blood. One minim of liquor epispasticus was then injected, also without effect. After this the pigeon was given a cold bath every day, that is, it was immersed in water for about half-an-hour, till the temperature was reduced to 96 or 97° F. This was done daily for nearly a month; the bird did not appear to suffer in health, and the proteosomata got less numerous but never disappeared.

The proteosoma first appears in the blood as a minute white speck in the elliptical red cell, generally at one or other end. These specks gradually increase in size, and at the end of about a week or ten days reach the size of proteosoma in adult birds. Some remain circular for some time and somewhat resemble the hyaline bodies seen in human malarial blood. Others soon appear to have a constriction in the centre and contain a few black granules. Most of them become halter-shaped when they reach the full size. They then extend from one end of the cell to the other, are crescentic in shape with bulbous ends, and contain numerous granules, generally scattered in the bulbous part.



15. Hyaline body in red blood cell.



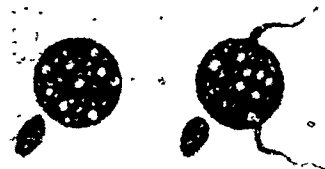
16. Small Proteosoma in red blood cell.



17. Halter-shaped Proteosoma.



18. Round Proteosoma.



20. Free Proteosoma and nucleus (free) of red cell.



21. Flagellating Proteosoma (Dialygram).

for flies, ticks, &c., as these insects have been said to be the cause of proteosoma in pigeons, but no ticks, flies or other insects were found on any of these young birds or in their cages at any time. One young pigeon was given chloroform and the spleen was removed. It died about a month later, and proteosomata were not found in the blood. Another had two minims of tincture of iodine injected into the liver and

In adult birds proteosoma is often seen free in the blood, sometimes though very rarely retaining the halter-shape; in these cases the nucleus of the red cell is still lying in the cavity of the body, and may have something to do with the persistence of the halter-shape, or they may both still be within the red cell, the latter being invisible from loss of its colouring matter. The free proteosomata are almost in-

variably circular and then they may often be seen flagellating, and exactly resemble the flagellating body of human malarial blood, except that the nuclei can always be seen in near proximity to them. Several pigeons, both full grown and young ones, were given quinine hypodermically and by the mouth, but without any effect in reducing the numbers of the proteosomata in the blood, or, in the case of the young birds, preventing their appearance.

There was a good deal of difficulty experienced in rearing young pigeons in the laboratory, several died, probably as the result of being fed by hand. The sparrows and crows also died in large numbers. One duck was intravenously injected with the blood of a pigeon with proteosoma, but could not be infected.

CONCLUSIONS.

1. The so-called "halteridium" is the halter-shaped, and the so-called "proteosoma" is the spherical-shaped, Laveran body in birds.

2. No form of the Laveran body, avian or human, can be isolated or cultivated. All the known facts show that it is not a parasite, and as it fulfils none of Koch's canons, it cannot be a pathogenic organism.

3. Neither the plasmodium nor the proteosoma possesses the function of reproduction.

4. Our experiments show that in birds the Laveran body, proteosoma, is a product of the blood, developed in the red blood cell, and not producing any deterioration in the health of the bird. It cannot be reproduced by inoculation from bird to bird, and is not infective and does not multiply in the blood.

5. Seeing that the Laveran body, the plasmodium or the proteosoma, is not a parasite, and that it cannot be reproduced by experimental inoculation, it is unlikely that it can be reproduced by a mosquito bite. There is no ground for supposing that the passage of the proteosoma through the mosquito, granting this to be possible, could render it infective. If it could, the true cause of malaria would be the mosquito and not the "parasite": this is of course absurd.

6. Ross's mosquito theory of malaria is based on a series of assumptions and not on facts. One of these is the assumption which was originally put forward by MacCallum, of Baltimore, U. S. A., and adopted without examination by Manson and Ross, that the flagellum is the male and the hyaline cell the female element of generation in the Laveran body in birds. Now the plasmodists say that the rosette is a sporulating body, and that the formation and liberation of spores by the rosette is the method by which the reproduction of the Laveran body is effected. Our discovery of the rosette in crows' blood proves that MacCallum's assumption at all events is false, since it is evident that even if the proteosoma were a parasite, it could not be reproduced in two

entirely different ways. On the other hand, the rosette is proved not to be a sporulating body in birds' blood by the fact that its "spores" are a great deal larger than the speck in the red cell, which is the form in which the proteosoma first appears in the blood. Another of Manson's and Ross's unwarranted assumptions is that it is possible to infect birds with proteosoma by mosquito bites. To have made his position tenable, Ross ought first to have shown that the birds he believed he had infected with proteosomata by mosquito bites would not have got them if they had not been bitten by mosquitos at all. Our experiments have clearly shown that you can never be certain that birds of the class in which proteosomata are found—such as sparrows, crows and pigeons—will not develop them spontaneously, and Ross's manifest ignorance of this fact entirely vitiates his inoculation experiments, as well as the conclusions he has drawn from them.

INFECTIVE CICATRISING GRANULOMA OR "ULCERATING GRANULOMA" OF MANSON.

By J. MAITLAND, M.D.,

LIEUT.-COLONEL, I.M.S.,

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SOME doubts have been expressed as to the identity of the disease, described by Manson as "ulcerating granuloma of the pudenda," with the affection of a similar nature which exists in India. With the view of clearing up this matter, I sent portions of a growth, removed from a patient in India, to Dr. Galloway, who had previously examined and reported upon the specimens from Guiana. Dr. Galloway very kindly examined the former, and the results of his investigations were published along with notes of the case in the *Lancet* of the 17th June last. The outcome of this examination was to show that the specimen from India was almost identical in structure with the disease described by Drs. Conyers* and Daniels as existing in Guiana, and which was named by them "groin ulceration," and by Manson "ulcerating granuloma of the pudenda." There can therefore no longer be any question as to the identity of the two diseases.

In India the disease appears to have been first noticed by K. McLeod† and described by him as "serpiginous ulceration of the genitals." At the Indian Medical Congress in 1894, Surgeon-Major J. A. Cunningham‡ described some cases which were apparently examples of this affection. A detailed description of the disease was published

* *British Guiana Med. Ann.*, 1896, page 13.

† *Indian Medical Gazette*, 1882, page 121.

‡ *Trans. Ind. Med. Cong.*, 1894, page 200.

by myself in the *Indian Medical Gazette* of May 1898, under the designation of "Chronic Venereal Sores." Later on* Captain C. L. Williams, I. M. S., published an account of a case and was the first to draw attention to the similarity of the disease to the "ulcerating granuloma" of Manson.† Mr. A. Powell has still more recently recorded his experience of cases of this nature, and at the last meeting of the South Indian Branch of the British Medical Association a very interesting paper on the subject was read by Col. A. M. Branfoot, I.M.S.

These facts serve to show that the disease is prevalent in many parts of India far apart from one another, and it is therefore fair to presume that it is common to the whole Peninsula. It is further evident from these reports that the disease is by no means of rare occurrence. Whether or not it is on the increase, there is no means of showing, but I have a strong impression that the numbers of cases presenting themselves for treatment at the Madras General Hospital have multiplied within recent years. Statistics unfortunately are of no assistance to us in this matter because, up to the present time, all such cases have probably been returned either as syphilis or as venereal sores.

It is somewhat unfortunate that the term "ulcerating" has been applied to this disease, because ulceration is not a characteristic feature of the affection; in fact the ulcerative process, when it occurs, is a complication rather than a necessary stage of the disorder. The term *cicatrising granuloma* would be much more accurate and expressive of the true nature of affection.

As the disease is not limited to the pudenda, it is doubtful whether a designation should be employed which would imply any such restriction as to the seat of the affection. Colonel Branfoot, in the paper already alluded to, appears to consider the disease to be identical with the "hypertrophy of lupus of the female generative organs" of Mathews Duncan.‡ But the characters of the latter, as described by Mathews Duncan himself, are quite unlike those of the disease under discussion. Dr. Robert Taylor of New York, so far back as 1890 and 1894, described two typical cases of this affection, occurring in Americans.§ The description of the disease given in his work on "Sexual Disorders" (1897) is the most accurate and graphic account that has hitherto been published.

Etiology and Pathology.—There is strong reason to believe that the disease is of an infective character. In the majority of cases that have come under my observation, the patients believed the sore to have commenced

as a chancre or a hubo. Just as in the case of yaws, the disease may successively affect two persons who have been closely associated with one another. Thus, in one of my cases in which the inner surface of the cheek was involved, the patient's wife became similarly affected.

The disease appears to be auto-inoculable (Conyers and Daniels). In this way the groin is thought to be infected by the penis, and the inner surface of the thigh by the scrotum.

All authorities are agreed that the disease has nothing in common with syphilis. The local disorder is never followed by any constitutional symptoms, nor do anti-syphilitic remedies have any influence upon the progress of the affection. In some of its features it bears a resemblance to lupus; yet in the main, its clinical characters are quite distinct, and the microscopic structure is unlike that of any tubercular lesion. It is quite distinct from any other affection belonging to the group of granulomata. Taylor writes of the disease as follows:—"When we consider the disastrous results produced by this growth, it seems almost incredible that it should belong to the recognised simple and benign new formations. Though possessing no malignancy, it led in the region affected in one case to as much suffering and to as deadly results as true malignant new growths are known to possess."

The growth consists essentially in an infiltration of the cutis with "plasma cells"; this mass of cells tending ultimately to become converted into fibrous tissue and to produce true cicatrization. There are no evidences of ulceration, nor is there any implication of the underlying tissues. The disease is confined to the skin. Dr. Galloway's description of the histology of the disease will be found in the *British Journal of Dermatology*, April 1897.

Geographical distribution, race, sex and age.—There is every reason to believe, as stated above, that this disease is common to the whole Indian Peninsula. It is also prevalent in Guiana (Conyers and Daniels) and possibly in Fiji (Daniels). Taylor's cases, already alluded to, occurred in North America and in white people. These cases are the only ones hitherto recorded in which Europeans were affected.

The disease appears so far as existing evidence goes, to affect both sexes in an equal degree. It is most frequently met with in early adult life between the ages of twenty and thirty. It does not occur below the age of puberty, nor is it seen in old persons.

Signs and Symptoms.—In the male the regions most frequently attacked are the pubes, groin, penis, scrotum, perineum and anus; in females, the labia, pubes, groin, inner sides of the thighs, buttocks and anus. The disease also occurs in the interior of the mouth affecting the inner surface of the cheeks, the gums and the palate. The first manifestation of the disorder

* *Ind. Med. Gazette*, Novr. 1898.

† *Ind. Med. Gazette*, April 1899.

‡ *Trans. Obstet. Soc.*, Vol. XXVII, 1885.

§ *American Journal of Medical Sciences*, February 1890, and January 1894.

is in many cases a small nodule situated in one or other of these regions, but in some instances it originates as a chancre or the starting point may be a suppurating bubo.

Whatever be the mode by which the disease commences, once it has started it gradually spreads from the point of origin, and may ultimately involve a very large area.

When seen in the early stages it presents the appearance of a small sore covered with exuberant granulations, and as it causes no pain and little inconvenience it is generally neglected by the patient for a long period of time. Examination of the sore shows that its base is soft and freely moveable, the disease being evidently confined to the skin. The surface is raised to a height of from quarter to half an inch above the level of the surrounding skin, and is somewhat irregular, being marked at intervals by cracks or fissures; sometimes it has a papillomatous appearance. The colour is pinkish or dirty dark red. There is in this stage but little discharge, and what there is dries on the surface, forming a very thin crust, in which some of the hairs of the part become entangled. A few broken stumps of hairs may be seen here and there piercing the surface of the sore. The edges are regular, but show no signs of growing epithelium; the epidermis appearing to terminate abruptly. If the mass of soft pink material is scraped away, a firm white fibrous-looking layer, which bleeds freely, is found beneath it. At some places the soft material penetrates the deeper fibrous layer, forming small pockets which dip down into the latter. During this stage little or no pain is experienced.

As the disease progresses, certain changes take place in the appearance of the sore; changes produced by attempts at healing; that is to say, cicatrisation of the deeper structures and the formation of new epithelium on the surface. The edges of the sore at this stage often present a slightly-puckered appearance and whitish islands of new epithelium appear scattered over the surface. The layers of epithelium increase in thickness, and the patches enlarge until a great part of the sore becomes skinned over. Generally, however, this tendency to healing is limited to one portion of the sore which still tends to extend in other directions. At other times, where a certain portion has skinned over a relapse occurs and pinkish nodules appear here and there on the surface.

As a rule, the tendency to spread keeps pace with the tendency to heal, and, as a result, the disease gradually extends leaving behind in it a trail marked by patches of white cicatricial tissue alternating with patches of disease. At some points fairly sound cicatrices are eventually developed, and these often become irregularly pigmented.

In male patients, when the disease attacks the genital organs or the neighbouring parts, it ultimately involves the whole of the pubes, both

groins, the penis and a considerable part of the scrotum. Creeping round and encircling the base of the latter, it involves the perineum and surrounds the anus.

Colonel Branfoot in his description of the disease as it occurs in females states that in many cases considerable thickening of the tissues occurs, resulting in an elephantoid condition. Such appearances, so far as my experience goes, are never seen in the male. Cases have been reported by Drs. Conyers and Daniels and also by McLeod, in which the disease was found associated with true elephantiasis. This, however, appears to have been an accidental complication and not, as in Branfoot's cases, a usual condition. It is possible that some of the latter may have been examples, not of infective granuloma, but of the disease already alluded to and called by Mathews Duncan "hypertrophy of lupus."

In a small proportion of cases, owing to constitutional debility or to other causes producing a depraved state of health, the disease assumes a much more active form and true ulceration takes place. In such cases the surface of the sore becomes depressed below the level of the surrounding skin, presenting a scooped out appearance. The edges are clean cut and a very profuse discharge occurs; in fact, all the signs of active ulceration are manifested. Very considerable burning pain is at the same time experienced and the whole aspect of the disease is changed. Such cases may end fatally, but are fortunately rare.

When the disease attacks the mucous membrane of the oral cavity, as it sometimes does, the appearances differ very considerably from those already described. Where the inner surface of the cheek is affected, a sore is seen, the surface of which is raised above the level of the adjoining healthy mucous membrane. This surface has a soft velvety appearance, smooth, but marked all over with shallow grooves and fissures. When the mucous membrane covering the hard palate is attacked, there is no thickening or anything suggestive of new growth. There is merely a raw appearance, as if the mucous membrane had been stripped off the part leaving an irregular raw-looking surface with sharply defined borders marked by a yellowish streak. At the same time, a very peculiar and almost overpowering odour is emitted from the mouth. This odour in itself is sufficiently characteristic to be diagnostic of the disease. There is no discharge from the diseased surface and but little irritation. The patient is able to eat pungent substances without much inconvenience.

The cicatrisation of the tissues, which occurs when the disease undergoes spontaneous cure, may result in deformity and serious complications. Not only may the penis become distorted, but stricture of the orifice of the urethra is a

common result. Stricture of the anal orifice may also occur. A patient under my care suffered from both these complications, and the stricture of the urethra proved ultimately to be the cause of death.

It has already been stated that in this disorder there is an entire absence of any signs of constitutional disease. The general health of the patient remains good, unless he becomes the victim of some complication. In a few cases anaemia is present, but it is extremely doubtful whether that condition ever results from the disease itself. In those exceptional cases in which active ulceration takes place, the general health becomes seriously affected, but there is reason to believe that in these instances the depraved state of the health is due to other causes and that the ulceration is secondary.

Diagnosis.—The local appearances are usually so well-marked that it is seldom that any difficulty arises in forming a diagnosis. The history of the case generally affords considerable assistance in forming an opinion in doubtful cases, the extreme chronicity of the disease being remarkable. From syphilis it is distinguished by the entire absence of any signs of disease in other parts of the body. Yet it must be borne in mind that the two diseases may be acquired simultaneously as the result of infection by a mixed poison, just as syphilis and chancre are sometimes simultaneously acquired. It is also to be remembered that a patient suffering from this disease may have previously acquired syphilis. It is cases such as these that have given rise to so much confusion in regard to the nature of this disorder.

In its clinical characters the disease bears some resemblance to rodent cancer, but unlike the latter it seldom if ever affects the face, and never produces destruction of deep-seated tissues. The microscopic characters are also quite unlike those of rodent cancer.

In its early stages, one of these sores bears a remarkable resemblance to the lesions characteristic of yaws, but in the latter disease, as is well known, the sores are always multiple.

From epithelioma the diagnosis is simple. The tendency to cicatrization, the absence of hard base and raised everted edges and the tardy progress of the disease, all serve to show that it is not epithelial cancer.

Prognosis.—The disease has little tendency in itself to lead to a fatal result. Death may occur in those cases in which active ulceration sets in, but in such cases there are probably other causes at work, and these are responsible for the fatal issue rather than the disease itself.

Death may occur indirectly as the result of complications, such as stricture of the urethra.

But, although the disease is seldom directly fatal, yet its course is so protracted that the patient's life may become a burden to him.

Even in those cases which come to hospital, the treatment is so difficult that the patient often loses patience and leaves hospital before a thorough cure has been effected. In this way the course of the disease may be indefinitely prolonged, and it is a common experience to find the same patient returning time after time to hospital for treatment.

Treatment.—When it is remembered that this disease is as much a new growth as cancer or lupus, it is not to be wondered at that, with the exception of strong caustic agents, local remedies have no effect upon it. Constitutional treatment for a like reason has no influence of any kind in the progress of the disorder.

The treatment must be based upon similar principles to those which guide the surgeon in the management of lupus and cancer. When the disease is so situated that it can be removed without danger to life, the whole of the diseased tissues must be cut away by means of the knife, although it is not necessary to cut wide of the disease as is done in cancer. The incision must include the whole thickness of the skin extending into the cellular tissue beneath. In performing this operation, it will be found that the tissues are extremely vascular and hæmorrhage is free. Large vessels may require ligatures and firm pressure must be applied for some time to arrest oozing.

In many cases, owing either to the extent of the disease or to its position, it is not possible to excise the growth. In such cases the following method of treatment should be adopted:—The patient having been anaesthetised, the whole of the soft pink material should be scraped away by means of a spoon, until firm fibrous looking structure is reached. All the pockets which dip into this structure must also be thoroughly scooped out. This procedure is followed by smart oozing, which must be controlled by firm pressure. As soon as oozing has ceased, the surface is wiped clean and a layer of Vienna paste, about an eighth of an inch thick, is spread over the whole surface. The operation having been completed, a hypodermic injection of morphia is administered to allay pain. About six or seven hours later the surface is cleansed and a boric acid poultice applied. The application of poultices is continued, until all the sloughs have separated. Very considerable benefit always results from this method of treatment, but the procedure has in many cases to be repeated several times before a cure is effected. Unfortunately this process of treatment is slow, and the patience of the sufferer is frequently exhausted before a complete cure has been arrived at. When the penis is involved, the last method of treatment may be tried, but, if it fails, and if the disease has lasted for a considerable time, partial amputation of the organ may be necessary.

RATIONAL DRESS FOR THE SOLDIER.

By C. J. MCCARTIE, M.A., M.D., M.Ch.

LIEUT.-COLONEL, I.M.S.

IN the June number of *The Indian Medical Gazette* I published an article, subsequently read at the annual meeting of the British Medical Association, on "*The Cause and Prevention of Heat-Apoplexy in the Army.*"* In it I again drew attention to the frequently repeated observation that soldiers are more liable to heat-apoplexy than any other class, and that this fatal susceptibility was due to their style of dress, and especially to the belts worn over their coats, which exclude the air which would keep their bodies cool. I concluded that this might be obviated by providing the soldier with the kind of dress which experience has taught natives, officers off duty, and civilians to adopt.

While, however, comparatively few men die of heat apoplexy, whole regiments may be prostrated by heat-exhaustion. This exhaustion from heat is partly due to the woollen and nearly water-proof clothing, but it is chiefly to be attributed to the belts, which confine the coat, exclude the air, and so deprive the man of nature's mechanism for keeping him cool by evaporation of the perspiration. This latter point is more fully explained in my first article.

In the hottest months, soldiers have to wear flannel shirts as a protection against catching cold. There are three hundred million natives in India, whose sole clothing in the hot weather, is a thin cotton shirt and trousers, and we never hear of their contracting diseases from cold at that time of year. It is not that they are insusceptible to cold; on the contrary, in the winter, in Upper India, many of them contract pneumonia and bronchitis from chills, and numbers die from these diseases. Moreover, thousands of European officers and civilians in India wear, in the hot weather, the thinnest and most porous of cotton shirts.

In the hot weather the diseases of the soldier are those caused by heat. When do we hear of any that can be attributed to "catching cold?"

A great deal of the fever in India is really thermic fever, but it is not shown under this head in the returns, because the official nomenclature has no such category.

I believe that most Army surgeons would agree that over-fatigue and exhaustion are amongst the chief causes of illness in the service, and it is very probable that typhoid is, in a great measure, due to them.

* For the benefit of readers in England we may mention that "heat apoplexy" is the term used in India to describe what is elsewhere called "sirasias." This remark is necessary as Dr L. W. Sambroon in his recent speech at B. M. A. Meeting coolly dismissed Colonel McCartie's arguments, assuming that "heat apoplexy" meant cerebral hæmorrhage-apoplexy, which is absurd.—ED., I. M. G.

I have seen a whole native regiment absolutely hors de combat from heat exhaustion. I have known a British regiment in a 10-mile march to drop over 400 men on the road-sides, and to march in only 200 strong. Notwithstanding the almost incredible endurance displayed by the men in the hot weather campaigns of 1897, the effect of the heat on the troops was appalling.

It is not only in the hot weather of the tropics that soldiers are so easily knocked up by the heat; the same thing, in a lesser degree, is seen at home and in the cold weather, and is due to the same cause—that the men become overheated because they cannot wear their coats loose and open. I have just read, in the *British Medical Journal* of 12th August, that in the Salisbury Plain manoeuvres "the chief cause of illness amongst the troops was heat exhaustion."

Every one remembers how the Guides Infantry made record marches in the hot weather in 1857 and 1897. But it is not generally known that to perform these feats of endurance they had to discard their uniform and to march in the rational costume of civilians. In the American civil war it used to be said that General Lee was able to get so much out of his men, because "he made them strip as if they had to run a race." As the soldier is, of all young men, the most easily knocked over by the sun, so he is, of all the most easily done up by fatigue, and from the same cause. He should be able to endure fatigue and to march well. In point of fact he can do neither. *His energy is used up in combating the debilitating heat caused by his uniform.* Even the dooly-bearers, who carry 62 lbs, seem fresh compared with the soldiers, who carry only half that weight. One never sees them or the laden coolies or other followers dropping from exhaustion like the soldiers. But give the soldier the same weight as he now carries and such a light, loose, sensible, dress as the civilian wears, and he will march twice the distance he can now cover, with half the fatigue.

The soldier has 7 lbs. of ammunition, and to enable him to carry it we load him with 4 lbs. of belts and pouches. The main object of this article is to show that these belts are the chief cause of disablement amongst soldiers. There is absolutely no necessity for them. A worse contrivance it would be difficult to devise. The cartridges can be much better carried in the men's pockets. These belts so buckle a man up that he cannot make use of his pockets, and space can hardly be found for even the first field dressing.

In tents the belts are hung on a rope. If the camp is rushed at night, as at Wano, one can imagine what a scuffle there would be in the dark to get into the belts, and what a time it would take. It was thought, in our brigade in 1897, that the time to get into the belts might be too long, so the men had to sleep in them.

They must have found lying on a bayonet and these lumpy pouches about as enjoyable as walking with peas in their shoes.

I have devised a form of dress, in which no belts are worn over the uniform. The coat can at all times be worn loose and open; or it may be taken off, and the man can march in his shirt and trousers. The soldier carries about 4 lbs. less than with the present equipment. When asleep on service some of the cartridges are in his pockets, the remainder, which are under his head, he gathers into his pockets as he rises. He is always, even when asleep, equipped and ready.

Also, in case of emergency, he could carry twice as much additional ammunition, food, or clothing, as with the equipment now in use.

In Tirah, it was found that the men were not able to get over the hills fast, owing to the cumbersomeness of their equipment. Some Gurkhas were selected as scouts and given a lighter armament. It has since been proposed that each corps should have a light company like these scouts. With the dress here proposed, the whole army would be light companies, more lightly and more suitably clad than the Gurkha scouts.

In the hot weather, soldiers should not wear woollen shirts, cholera belts, or putties. In the winter, all soldiers, native as well as British, should have flannel shirts.

The proposals here made are entirely endorsed by so authoritative an exponent of medical science as the *New York Medical Journal*, which, in an editorial article of the 22nd July, reviewing my essay on the cause of heat apoplexy in the army, says: "The rational attire for soldiers serving in tropical climates would be light, loosely made garments of very porous material, and an entire absence of straps, belts, pouches, &c."

These proposals for improving the health and efficiency of the troops have the unusual merit of saving large sums, now expended on belts and pouches, and it should be another recommendation in their favour that it costs nothing to give them a trial.

CHONDROCARCINOMA OF THE TESTICLE.

By ARNOLD CADDY, F. R. C. S. (ENG.),

Member of the Clinical and Pathological Societies of London.

THIS case has been brought forward for publication, partly because of its pathological rarity and partly on account of the interesting clinical history. The patient was a European, aged 29, single, and working in Calcutta. He was born and had lived an athletic life in one of the colonies till the age of 26, when he came to this city. In December 1894 he was struck by a cricket-ball on the right testicle. He had con-

siderable pain at the time of the accident, which rapidly passed off, and he did not lie up. No swelling appeared until a week later, when he noticed the bottom of the testicle begin to get hard, and it remained so until October 1895, when the testicle began generally to increase in size and the hardness to spread upwards. He was seen by me in Calcutta for the first time in September 1896. The testicle was then the size of a duck's egg, painless, generally hard, and somewhat heart-shaped, the upper part of the testicle being the most swollen. As there had been no recent increase in the size of the organ, it was decided to wait and watch its growth; it was seen from time to time, and no further perceptible enlargement was noticed.

In December 1897 he had an attack of enteric fever, and when convalescent he was sent off to New Zealand for a change, and was four and one-half months away from Calcutta. At his return, on the 4th June 1898, he weighed 174½ pounds.

During the first week of November 1898, he began to feel pain and tenderness in the testicle for the first time since the original accident, chiefly at the spot where the cord joined the testicle. A fortnight later the gland began suddenly to increase in size.

On the 14th of December 1898 he again came to me; the testicle was then the size of a small shut fist, it felt generally hard and was tender everywhere. The cord was not thickened, no glands could be felt in the groins, and no swelling in the region of the iliac glands was discernible.

Dr. William Coulter saw the case with me and a diagnosis of probable sarcoma of the testicle was made.

On the 17th of December 1898 I removed the organ and the patient made a rapid and uneventful recovery. On January 12th, 1899, his weight was 169 pounds. He has since then kept excellent health, and no sign of any recurrence of the growth has been observed.

The removed testicle was the size of a shut fist. When it was laid open vertically, no testicular tissue was apparent to the naked eye, and the whole gland appeared to be infiltrated with a growth. At the upper and back part a nodule of cartilage was cut through, the size of a nutmeg. The specimen was placed in 5 per cent. formal solution, and a microscopical examination was made by the late Major J. F. Evans, I.M.S., Professor of Pathology at the Calcutta Medical College, who reported as follows on the 9th of February 1899:—

"The testicle is the seat of a chondrocarcinoma; the cartilage is located in the neighbourhood of the epididymis, and is surrounded and interrupted by many cysts lined by columnar epithelium. The cancer is of the medullary kind."

Professor Evans added that the majority of the tumors of the testicle that had reached him

in the past two years had been sarcomatous. So far he had only been able to find chondrocarcinoma of the testicle described and figured in the last edition of Ziegler's 'Special Pathological Anatomy,' published in 1897, Chapter 102, Article 309, pp. 990, 991, where, after describing carcinoma of the testicle, it goes on to say:

"Carcinomata likewise in many cases contain rounded nodes and nodules or elongated, ramified, and cactus-like patches of cartilaginous tissue, chiefly in the neighbourhood of the rete testis and epididymis. These patches, as they grow, sometimes break into the lymphatics and seminal canal of the testis, and therein ramify, assuming the most diverse forms. In this case we might distinguish the tumour as chondrocarcinoma."

The microscopic sections of the growth, in this case, correspond with the above description, and shew cystic tubules of the epididymis and cartilaginous patches, with nests of cancer cells very similar to the figure (No. 500) in the text.

The clinical history of this case is very interesting from the long period of time during which the disease remained quiescent, from the date of the original injury in 1894, until the growth suddenly began to increase in size, a period of nearly four years.

Some forty years ago Sir James Paget removed a testicle for tumor. Recurrence ensued, and the patient died from dissemination of the disease. The tumor and secondary growths were placed in the museum of St. Bartholomew's Hospital, London, and the specimen was described by Sir James Paget as one of enchondroma of the testicle.

The specimen shewed to the naked eye a cartilaginous looking tumour of the testicle, with growth extending along the spermatic cord and the pampiniform plexus to the inferior vena cava, where there was a mass of new growth projecting into the lumen of the vessel. Sir James Paget found numerous secondary cartilaginous growths in the lungs and an intra-vascular growth in a branch of the pulmonary artery. The lymphatic glands were not enlarged.

Mr. H. Trentham Butlin, F. R. C. S., in his work on "Sarcoma and Carcinoma" (London, 1882) expressed a doubt, whether this was a case of enchondroma and suggested the possibility of its being sarcomatous.

The late Professor A. A. Kanthack and Mr. P. Strangways Pigg made an examination of the specimen and published the result of their work in a paper entitled "Chondrocarcinoma of the Testis," which was read at a meeting of the Pathological Society, London, held on the 19th of January 1897; Mr. H. Trentham Butlin, the then President, being in the chair.

The investigation left no doubt in the minds of Professor Kanthack and Mr. Pigg that the case was a columnar-celled carcinoma, in which metaplasia of the fibrous tissue into cartilage

had taken place, this chondrification being in places so extensive as quite to mask the carcinomatous nature of the tumor. The growth had extended by the veins and not as originally described by the lymphatics. Sir James Paget had observed in some of the "lymphatics" a lining of columnar cells, the true significance of which, however, had been missed. The extension to the vena cava had in reality taken place by the spermatic veins, and sections through the pampiniform plexus shewed that the lumen of the veins was filled by a fibrous stroma containing alveoli lined by columnar epithelium. What Sir James Paget had considered as an enlarged and infected gland lying upon the vena cava was a secondary growth of cartilaginous and carcinomatous elements. It was noteworthy that Sir James Paget observed that the lumbar and inguinal glands were free of disease. The fibrous stroma contained much cartilage, usually in round masses, but in places shewing gradual transition from fibrous tissue. In some parts the tissue was loose and almost myxomatous in character. In the testis cartilage was predominant, but the existence of columnar epithelium could be traced. It was not easy to explain the presence of cartilage in the growth, but Virchow had described it in carcinoma both of the testis and ovary. Professor Kanthack and Mr. Pigg were of opinion that, although Virchow's view of the source of carcinoma from connective tissue was no longer held, nevertheless the importance he attached to the stroma, as well as to the epithelium in carcinoma, was not to be lost sight of; the reproduction of cartilage in all the secondary growths shewed that more than the epithelial cells were concerned in the metastases.

At the conclusion of Professor Kanthack's and Mr. Pigg's report, Mr. Butlin said he doubted the innocent nature of the growth on reading Sir James Paget's description, till then he had not seen any microscopic sections of it. In his opinion cartilage played quite a secondary part in such growths as contained it, and were followed by metastasis.

Mr. A. A. Bowlby, F.R.C.S., thought the demonstration clearly shewed the tumor to be a carcinoma with chondrification of the matrix. The non-involvement of the lymphatic glands in this case was contrary to what was generally observed in sarcoma and carcinoma of the testis, but perhaps such chondrifying carcinomata formed an exception.

Professor Kanthack was unable to answer this question, as the clinical history was so largely wanting in the cases described in Germany by Virchow, Ziegler and others.

Professor Evans kindly consented to join me in the publication of my case, and the preparation of a paper on the pathology of what in India is a rare form of testicular new growth.

Unfortunately, before this could be carried into effect, Professor Evans, who had been making autopsies on some cases of bubonic plague, contracted that disease, and died at his post on the 13th of March 1899, to the great regret of all the medical profession in this city.

THE ADMINISTRATION OF ANTI-PERIODICS AND IRON TO PRISONERS IN JAIL.

By C. R. M. GREEN, F. R. C. S., D. P. H. (CANTAB.),
MAJOR, I.M.S.

Nature of experiment.—To ascertain the influence of the above drugs in preventing fevers, bowel-complaints and sickness.

Method.—On August 19th, 1896, half the convicts in the Bankura Jail (excluding females, convalescents and those sick in hospital) were selected, by taking every alternate man when in file and putting him in a special gang, called the medicine gang.

Their names were taken down, and a special badge placed on their clothing.

To every man in this gang—

Tinct. Ferri Perchlor. ... m. x
Cinchonidine Sulphate ... gr. v
Aque ad ... ʒi

was given night and morning for 90 days.

Period.—The number of the gang was kept up by taking every alternate fresh admission into

TABLE OF RESULTS.

ADMISSION FOR.	UNDER TREATMENT 145.			NOT UNDER TREATMENT 180.		
	Actual Numbers.	Numbers proportionate to total convicts (325).	Mortality.	Actual Admissions.	Numbers proportionate to total convicts (325).	Mortality.
Diarrhoea and dysentery ...	27	60.51	...	32	57.7	2
Malarial fevers ...	9	20.17	...	20	36.1	...
Other complaints	21	47.06	...	14	25.27	1
Total admissions...	57	127.75	...	66	119.16	3
Total number of days spent in hospital ...	489	1096.0	...	471	850.4	...

the jail, and every alternate man discharged from the hospital or convalescent gang, who were in the hospital or in the convalescent gang, at the time the treatment was commenced. By these measures no selection was made, and the surroundings of those under treatment, and of those not

under treatment, were fairly similar. The exact number of half the convicts could not be kept up, owing to releases falling sometimes more in one gang than in the other.

Numbers.—The average number of convicts under observation was 325. Of these 145 or 44.6 per cent. were in the medicine gang, and 180, or 55.4 per cent. were not under treatment. The number of days spent in jail by the convicts under observation, while the experiment lasted, was 29,244.

Remarks.—The chief result is that those under the treatment furnished fewer cases of malarial fever than those not under treatment.

If there had been no prophylactic issue of iron and cinchonidine, there would have been 16 more cases of fever.

The number of bowel-complaints shewed no decrease amongst those under treatment, but there were two deaths amongst those not under treatment, and proportionately there would have been 3.4 if there had been no treatment. Both the number of admissions and the number of days spent by the sick in hospital was greater in the gang under treatment. The excess is almost entirely due to "other complaints," such as bronchitis, boils, itch, hydrocele, &c.

The small numbers under observation detract from the value of these results, but they shew the distinctly beneficial effect of the treatment in the prevention of malarial fevers.

CASE OF SCARLATINA IN INDIA.

By K. N. DAS, M.D.,

Registrar, Medical College Hospital, Calcutta.

THE revival of the important inquiry, whether scarlatina occurs in India, by Drs. Caddy and Cook through the *Indian Medical Gazette*, and almost simultaneously by Mr. James Cantlie, in an article for discussion in the *Journal of Tropical Medicine* for July, leads me to record the following case which had all the clinical phenomena of scarlatina.

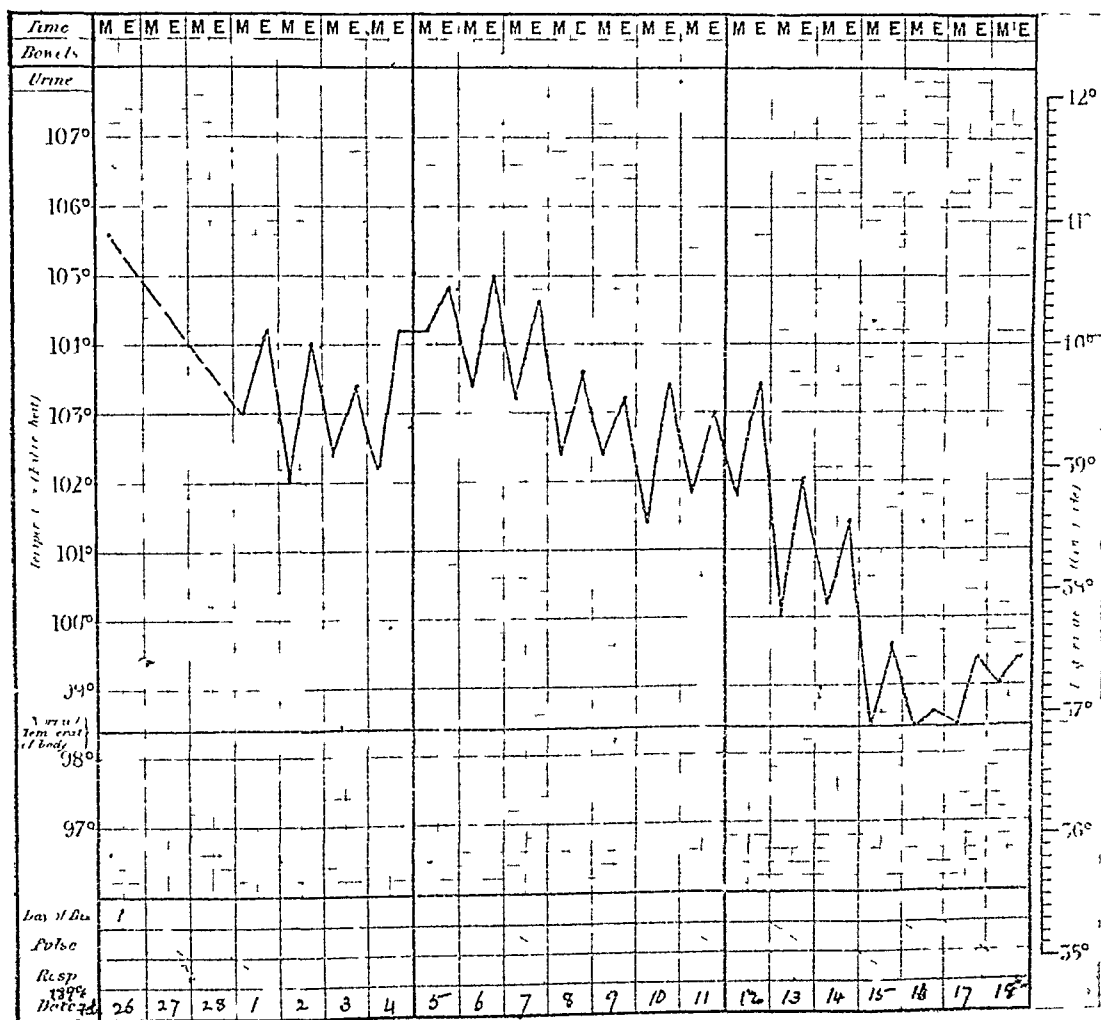
Myrtle, T., æt. 6, born in India, both parents European, resident of Saraghat, came down to Calcutta for a few days with her mother and a sick sister, who was admitted into the General Hospital for fever. The patient Myrtle lived at the house of her aunt near Ballygunge. The mother started for Sara with Myrtle a few days later (on the afternoon of 25th February 1899). The history of the case after this is better given in the following account by the father submitted to me in a letter: "Before Myrtle got to Sara at 9 P.M., she complained of not feeling well, looked rather dull and had slight fever and sore-throat. Next morning the fever rose high to 105.6° F., and continued high like this till she was taken down to Calcutta on the 28th. During this time her sore-throat became worse, she feeling

great pain when swallowing her nourishment. The medical officer at Sara attended, and on the 26th noticed a rash breaking out over her face and body which resembled measles. The next day 27th, the eruption seemed thicker and closer together and of a deeper red. Her throat was now very painful, and Mrs. T getting alarmed took her down to Calcutta, arriving on the 1st March when Dr. K. N. Das saw her."

When seen by me, her condition was as follows: Patient dull, eyes congested, complained of headache. There was a bright red, generally diffused, rash all over the body fading on pressure. Marked dyspnoea with swelling of the glands of the neck. Typical strawberry tongue. Soft palate, uvula, fauceal pillars, very much congested and swollen. Tonsils very much enlarged, almost touching each other in the median line,

throat:—Rx, Pot. chloras, liq. ferri perchlor., boro-glyceride and glycerine. Steam atomiser was also used. Diet, milk with Benger's food and soup.

Subsequent progress.—Next morning the dyspnoea was found to be worse, and leeches were applied at the angles of the lower jaw with immediate relief. The rash was gradually fading away. Marked desquamation was noticed in a couple of days. The condition of the throat gradually became better. Urine was examined regularly. Its quantity increased and the albumen decreased, the latter entirely disappearing in a few days. She complained of much pain in the wrist and elbow joints, these being distinctly stiff. Nourishment was taken very well all along. The course of temperature is shown in the accompanying chart.



with small sloughing patches. Much difficulty in deglutition. Nothing abnormal discovered in heart, lungs, liver or spleen. Bowels constipated. Urine very scanty and contained $\frac{1}{2}$ albumen. A few hyaline casts present.

Treatment.—A mixture containing pot. chloras, quinine murias and tinct. ferri perchlor. was ordered, as also the following paint for the

Remarks.—It is certain that the infection took place in Calcutta before the child started for Sara. There is no history of infection from Europe. Case No. I of Dis Caddy and Cook remained in the General Hospital till 21st February 1899, about which time a sister of the present patient was lying ill with fever, and the mother was a constant visitor to the General

Hospital. Could not this be a possible source of infection? It was evident that the disease did not prove infectious to others. Is it, as Dr. Cantlie suggests, that the diminished infective power of scarlatina is due to climatic changes? Gresswell in his masterly contribution on the "Natural History of Scarlatina" says that it is possible that changes of constitution dependent upon season and climate also have their influence, and that in this way "the comparative benignity of scarlatina, so frequently observed in warm weather as compared with its manifestations in the same country in colder weather, following a hot and dry season, may be explained, as also the fact that the disease is so generally mild when introduced into certain hot latitudes even among Europeans." Gresswell further adduces facts to show that the "influence of season" means a change in the virus dependent directly or indirectly on meteorological changes.

Dr. Cantlie suggests whether it is possible that scarlet fever is present in the tropics in some "altered form." It would, I think, be profitable if facts are collected with regard to the clinical phenomena of measles* (as seen and diagnosed in this country).

ENTERIC FEVER IN NATIVES OF INDIA.

By ANDREW BUCHANAN, M.A., M.D.,

MAJOR, I.M.S.,

Superintendent, Central Jail, Nagpur, C.P.

THE Editor of the *Indian Medical Gazette* has asked me to write an account of the cases of enteric fever which I have seen in Natives of India. Since 1894 there have occurred 25 cases in the Nagpur Jail. These cases were seen by a large number of medical men and by some medical ladies, and on many occasions at the monthly meetings of the Nagpur Clinical Society the subject of enteric fever has been discussed, and the lesions found *post-mortem* in the intestines have, on several occasions, been shown at the Society. During the past ten years I have made enquiries from a large number of men in the Indian Medical Service as to whether they had seen cases of enteric fever in Natives, and only a very few have seen any cases, so it would seem that its occurrence is very rare.

In *Indian Medical Science* for 1860 I find a clinical lecture on enteric fever, which was delivered by Surgeon Gobdeva, Professor of Medicine at the Medical College, Calcutta, in December 1858, and he states "I feel all but certain that we have had cases of typhoid fever

among the Natives in the Hospital. I have mislaid some notes of the *post-mortem* examinations of two or three Native patients which I thought at the time were illustrative of the morbid anatomy of typhoid fever, but they were cases about which I felt uncertain during life."

The subject was first brought before the Medical Society of Nagpur in July 1895, when I read a paper in which a detailed account of five cases which had occurred in the Nagpur Jail was given. There were present on that occasion Colonel Newman, Administrative Medical Officer of the Central Provinces; Colonel Little, A.M.O., of the Berars; Major Harris, Civil Surgeon, Nagpur; Dr. Agnes Henderson, Captains Faichnie and Hodgins, R.A.M.C.; five Assistant-Surgeons and fifteen Hospital Assistants. An interesting discussion followed the reading of the paper. I propose first to give this paper and a note of the discussion and then give a short account of some of the cases of special interest which were met with later.

At the time of reading the paper in 1895, no cases had been verified by *post-mortem* examination, but there have unfortunately been frequent opportunities of verification since that time.

Paper of 1895.—I remember hearing a medical officer who had had over eighteen years' service in India state that he had never seen a case of enteric in a Native and he did not believe that it occurred. This was early in 1890. I had seen one case before this which I thought might have been enteric. In the autumn of 1890, while I was in medical charge of the 16th Bengal Cavalry at Jullunder, there were several cases of enteric in the Hospital for British Troops. A native boy was admitted to the Cavalry Hospital, and the Hospital Assistant Pati Ram, who had never before seen a case of enteric fever, drew my attention specially to this lad, and said he suspected that he had enteric fever.

It was the peculiar appearance of the stools which led him to suspect enteric. On the sixth day there was tenderness on pressure in the right iliac fossa. On the tenth day some spots were noticed—three on the right arm and three on the left leg. The boy was unusually fair for a Native, and the rose-coloured spots were well seen, especially when the lad was carried into a good light. The spots came out in crops on three successive days, they were carefully marked, and it was noticed that each crop almost disappeared about three days after they had been seen.

I shall not give here full details of the case, but I may repeat some remarks which were made in the case book at the time: "This case is interesting in connexion with the question—Does enteric fever occur in Natives? There can, I think, be no doubt that this is a case of enteric. None of the symptoms commonly noticed in an uncomplicated case have been absent except

* We see one or two cases of measles with all clinical symptoms nearly every year among Native prisoners in jails, but have never seen a very extensive spread of the disease in India. The possibility of endemic dengue must also be remembered.—Ed., I.M.G.

tympanitis. The gradual onset of the illness, the appearance of his tongue and face, dilated pupils and listless countenance; the tenderness in the abdomen, especially in the right iliac fossa, the appearance of the stools, especially in the early stages, slight delirium in the early part of the second week, a remission on the tenth or eleventh day, and the spots coming out in crops—all point to the case being one of enteric. Captain Aldridge, R.A.M.C., who had then several cases of enteric under his care in the British hospital, saw the lad on several occasions, and he said that he had no doubt that the case was one of enteric. On the fifteenth and sixteenth days the boy's temperature ran up in the evening, and it was afterwards found out that his friends had given him some *chupatties* (scons) to eat. On the twenty-first or twenty-second day the temperature came nearly to normal.

For four years subsequent to this I did not see any case of enteric, and then a good example of the ambulatory type was seen in the Nagpur Central Jail. A man was admitted to hospital suffering from what appeared to be ordinary malarial fever. The fever stopped, and the man was discharged to the convalescent gang. A few days later he was admitted with symptoms of sudden collapse, tympanitis and fever. He died next day. The *post mortem* revealed ulceration of the Peyer's patches in the lower part of the ileum and perforation.

During the past few weeks five cases of enteric fever have occurred in Native prisoners in the Nagpur Jail. The symptoms in these five cases will be referred to, and a comparison will be made between the symptoms observed in these cases and those which have been noticed in Europeans.

For convenience, the five cases will be referred to as A, B, C, D, E.

Age.—The ages of the five patients are 30, 26, 18, 25, 20. Roberts has stated that individuals under 30 are twice as liable as those over 30, and that half the cases occur between 15 and 25. From such a limited number of cases, one cannot draw any general inference; but it is interesting to note that the ages of the Natives who were attacked are much the same as the ages of Europeans who are more subject to the disease.

Sex.—Of the five cases, four were males and one was a female. The number of women in the Jail is, however, very small as compared with the number of men—roughly 1 to 25.

Onset.—The disease came on gradually, as will be seen when the temperature is considered.

Tongue.—In some of the cases the upper and posterior surface of the tongue was covered with a brownish yellow fur, and the edges of the tongue were red. In one or two the yellow colour was marked. If a small quantity of finely powdered iodoform were sprinkled over the tongue, it would give an appearance not unlike that which was seen in two cases. In others the tongue did not present anything charac-

teristic. In a lecture delivered recently, Whipham, of St. George's Hospital, has stated that there is no tongue which is of special diagnostic value in enteric. He describes the special tongue of fever and gives an instance of a boy who had typical enteric but whose tongue was quite clean. The tongues of several other cases in hospital at the same time for malarial fevers were compared with the tongues of these enteric cases. The yellow coating would appear to have been more in some of the enteric cases, but not to such an extent as to be of any value from a diagnostic point of view. In one case (C) the tongue had a uniformly glazed appearance and was not at all like the tongues of A and B. It would appear, then, that there is not at least in all cases anything in the appearance of the tongue which is specially characteristic of the disease.

In those cases in which delirium was at all a prominent symptom, the patients were for a few days unable to protrude the tongue beyond the lips.

Abdomen.—Tenderness was complained of in all cases, and pressure in the neighbourhood of the umbilicus caused pain. Gurgling was detected on pressure in the iliac fossæ in all cases. The gurgling was found perhaps as much in the left iliac fossa as in the right.

Abdominal distension.—Sir W. Gull lays stress on this as being one of the most trustworthy facts in making a diagnosis. In these cases it was present, but only to a slight extent.

Edema of abdominal wall.—There was œdema of the abdominal wall in some of the cases; it is not known if this is a symptom usually found.

Bowels.—In A there was no diarrhoea in the first ten days. He had one motion daily or one every second day. On the 12th day he had two.

(To be continued.)

A CASE OF CONTINUED FEVER ENDING FATALLY IN CHAPRA JAIL.

By R. H. MADDOX, M.B., C.M.,

CAPTAIN, I.M.S.,

Civil Surgeon, Chapra.

DEWAN RAI, Rajput, aged 18 years, was admitted to the Sewan sub-jail, on 1st June 1899, to serve four months rigorous imprisonment for theft, this being his first conviction, and transferred to Chapra on 3rd June. In jail he worked at twisting thread most of the time, until 3rd August, when he came to hospital for observation, having suffered from fever since the preceding night. On 4th August, as the fever continued, he was formally admitted to hospital, though he had remained in the hospital since the morning of the 3rd.

A CASE OF CONTINUED FEVER ENDING FATALLY IN CHAPRA JAIL.

BY R. H. MADDOX, M.B., C.M.

RECORD OF TEMPERATURE.

JAIL CHAPRA. REGISTER No	1469.	NAME AND CASTE	DEWAN RAI, RAUPUT.	AGE	18

DISEASE REMITTENT FEVER, ENTERIC FEVER? P.M. DATE OF ATTACK 3RD AUG. 1899 RESULT DEATH.

[illegible]

His health on admission to jail had been noted as good, and "hard labour" had been ordered.

He was vaccinated on 5th June, this proving successful in spite of there being marks of small-pox on the body. His first work in this jail was at the rice cleaning *dhenki*, from 5th to 12th June, after which he was employed on twisting thread for *nearar* until admission to hospital. On 11th July his gums were found to be slightly inclined to bleed, and lime juice \bar{z} i was ordered twice weekly.

On admission to hospital he was a healthy looking youth with rather fair skin. He simply complained of fever with no headache, abdominal nor other pain. On 3rd August he was given powder No. 18 of the dispensary pharmacopœia, and ordered diaphoretic mixture No. 6 of the same.

4th August 1899.—The tongue was clear in front, but slightly furred at the back; his bowels had acted twice, and beyond the fever he had no symptom except slight loss of appetite. He was put on sago and milk, and the diaphoretic mixture continued. On this, as on all succeeding days, a careful examination for 'spots' was made over the skin of the abdomen and lower part of chest. The lungs were clear, and the heart sounds perfectly normal.

5th August.—The condition remained the same and excepting the high temperature the patient looked perfectly well. Quinine gr. v was ordered twice a day, and antifebrin gr. v was given in the evening.

6th August.—No change.

7th August.—The diaphoretic mixture was stopped, and a simple diaphoretic not containing aconite was ordered. It was not till about this date that I began to be seriously alarmed about this case; half a seer of extra milk was ordered, also creasote half a drachm, mixed with half a drachm of vaseline was rubbed into the skin in the evening and ordered to be continued thrice daily.

10th August.—The patient had two loose stools last night and vomited four times; there was nothing characteristic about either the stools or the vomit to naked eye examination. A soft greyish brown fur was found extending forward over the tongue, but there was no abdominal pain or tenderness, and no gurgling over the right iliac fossa. The former treatment was continued, and rum half a drachm, every three hours, was ordered, as the pulse was notably weaker. The lungs and heart were normal.

11th August.—No return of vomiting or diarrhoea, motions somewhat light coloured but formed. In other respects the condition was unchanged. No benefit appearing from the creasote inunction, it was stopped to-day.

12th August.—Condition the same. Sponging with tepid water and dilute acetic acid ordered to be done three or four times a day.

13th August.—The only change was a little cough at night which was explained by some dry râles heard mostly at the bases, but also audible in front. There was no dulness, and the heart sounds were normal though accelerated.

14th August.—Quinine stopped and diaphoretic mixture only given.

15th August.—Diaphoretic mixture was stopped, and ammon. carb. gr. xv, tinct. cinchonæ co. m. xv, tinct. digitalis m. iii, aqua \bar{z} i, ordered every 4 hours.

17th August.—Condition practically unaltered. Phenacetin gr. vii given at night, and the following mixture substituted for the former one:—R. Liq. ammon. acetat, m. xx, spt. ammon. aromat. m. x, phenacetin gr. ii, aqua \bar{z} i, every 3 hours.

18th August.—The above mixture given during the day, and in the evening ice was applied to the head, and the body sponged with ice-water and rubbed with small pieces of ice for a short time.

19th August.—The ice was again applied in the morning, and the mixture stopped. There was a distinct fall in the temperature as the result of the ice application (*v. chart.*) Ice ordered to be applied to the head constantly and ice-water sponging twice a day; also the following was given as a stimulant:—Spt. ammon. aromat. m. x, liq. strychniæ m. $\frac{1}{2}$, aqua \bar{z} ss, every 2 hours. The rum had been continued since first noted.

20th August.—Temperature again rising, patient getting weaker, pulse weak, lungs slightly dull posteriorly, and had sonorous râles over the whole chest; heart sounds feeble but clear, mental faculties duller and some delirium.

21st August.—The patient is gradually lapsing into a typhoid state with low delirium, from which he can be roused with difficulty; also a tendency to convulsive movement of a clonic character of the upper extremities both being affected. The mixture containing strychnine stopped, and only rum and milk given with ice to the head and some spt. ammon. aromat. m. xv given every 2 hours.

22nd August.—The temperature rose since midnight and at 8 A.M. was 104°. The patient was dying; he gradually sank and died at 11-20 A.M.

Post-mortem examination at 5-30 P.M., six hours after death.

Post-mortem rigidity marked over all the body.

Lividity slight posteriorly.

Body much emaciated and muscles wasted.

Thorax.—Lungs distended and crepitant throughout, congested at both bases.

Pleura normal, pericardium normal.

Heart.—Contracted as to the ventricles. Right auricle filled with fluid blood and a partially decolourised clot extending into the auricular appendix and slightly into the tricuspid

orifice. The other cavities were empty, and their valves presented no sign of disease. Heart muscles firm and contracted showed no marked disease. Aorta normal and valves competent.

Abdomen.—Stomach contains a small quantity of glairy fluid, mucous membrane pale and smooth, some *post-mortem* congestion near pyloric end of greater curvature.

Small intestines, congested in places at the upper part and contain a very small quantity of fæces, on tracing it down towards the ileum swollen Peyer's patches are found as the ileo-cæcal valve is neared. These are found very much swollen (some projecting quite 2 mm. from the surface) and ulcerated. The ulcers are deep, the edges are not ragged as a rule, and the ulcer in most cases had a punched-out appearance with congested base. In one or two instances the base of the ulcer is formed by the serous coat with, perhaps, a very thin layer of the muscular coat.

Large Intestine.—The solitary glands are enlarged and congested. There is ulceration on the ileo-cæcal valve on its cæcal aspect. The vermiform appendix is thickened and congested. Mesenteric glands near the ulcers are enlarged but not themselves ulcerated.

Liver enlarged, substance pale, the vessels contain fluid blood. The spleen was enlarged to about double normal size, substance deep in colour and friable.

Kidneys are congested, substance soft, capsule strips readily. Pancreas is very hard in substance and cuts almost like soft cartilage. Peritoneum normal except slight congested patches over the small intestine.

Brain membranes normal, superficial vessels congested, a small quantity of sero-purulent fluid was found over the hemisphere especially on the right side in the region of the upper end of the fissure of Rolando.

Brain substance pale, ventricles contain a small quantity of serous fluid.

Choroid plexus not congested.

Portions of brain, heart (right auricle), liver, spleen, pancreas, small intestine including the cæcal valve and kidney reserved for further examination.

Remarks.—This case presented considerable difficulties during life and persistently resisted all attempts at treatment. The temperature never went down though tested at all hours. After the first few days owing to the persistence of the fever strong suspicions of enteric were aroused; but the tongue, until late, scarcely showed any furring, there was no headache, no abdominal symptoms except those noted on 10th August. No appearance of rose spots or any other sort was ever seen, though daily carefully looked for. There were no premonitory symptoms, no tenderness or gurgling over the right iliac fossa, the spleen was enlarged but this is common in malarial fever. It was evi-

dent early in the case that this could not be a case of ordinary malarial fever, but from the utter absence of symptoms no special treatment directed against enteric was undertaken, except that great care was taken as to disinfection of soiled clothes, etc., and destruction of the excreta.

In the *post-mortem* examination the ulcers were clearly defined, other things noticeable were the extreme hardness of the pancreas and the sero-purulent effusion over the right hemisphere (it scarcely existed if at all on the left side). Could this have had anything to do with the convulsions occurring a day or two before death? Strychnine though given in minute doses was suspected and promptly stopped, but this can hardly have produced such an effect. None of the normal concomitants of enteric fever existed, such as peculiar smell of the patient (which I have rarely failed to notice in Europeans, and in the only case of undoubted enteric I have had in a native,) condition of tongue, etc.

Source of infection.—This youth had been in jail for two months, and had had exactly the same food as every one else. The drinking water was pronounced suspicious in June, but it is brought from the private well of the Civil Surgeon in his compound. Before issue it is filtered in *kankur* filter beds and then boiled.

The milk is supplied from cows which never leave the inner jail enclosure, and besides is always boiled before use. Care and supervision are exercised in the cooking and cleaning of utensils. Other water is used in the jail for washing purposes drawn from wells in the jail enclosure, this may be contaminated and may have been drunk.

Further, so far as I can find out no case of enteric has occurred in the district for some years.

The last case was, I believe, a young European who died in Chapra about two years ago.

A MIRROR OF HOSPITAL PRACTICE.

ACUTE TETANUS TREATED BY INTRACEREBRAL INJECTION OF TETANUS ANTITOXIN.

By W. H. QUICKE, F.R.C.S.,

MAJOR, I.M.S.,

Second Surgeon, Sir J. J. Hospital, Bombay.

THE following three cases of acute tetanus treated by the intracerebral injection of tetanus antitoxin may be of interest, as this method of treatment is now on its trial.

H. K., age 26, was admitted on 2nd November 1898. The patient states that about seven days ago he received a contused wound on the right leg from the wheel of a cart.

There is a wound of about the size of a two-anna piece situated on the external malleolus of the right leg.

The patient is suffering from tetanic spasms which occur frequently. Pulse 120; respiration 30; temperature 103.2° F.

The patient was put under chloroform, a small flap of scalp was turned down, and a small hole drilled in the skull by means of a dental engine over the posterior end of the middle frontal convolution. 5 c.c. of antitoxin serum were injected into the brain. The fluid was injected very slowly, occupying a period of 20 minutes. The flap of scalp was replaced, and the wound dressed antiseptically. The wound on the ankle was scraped and dressed.

30th November.—The spasms continued to increase in frequency during the night. Pulse 120; respiration 44; temperature 103.6° F. The patient died in the afternoon.

A *post-mortem* examination could not be obtained.

B. N., age 26, admitted into the J. J. Hospital on the morning of 1st December 1898, suffering from acute tetanus of three days' duration, states that he received a small lacerated wound on the forehead two days ago. No history of any other wound.

The spasms are very frequent. Pulse 104; respiration 28; temperature 102.8° F. 5 c.c. of tetanus antitoxin were injected into the motor area of the right side of the brain. Time occupied injecting the fluid was about 20 minutes.

The spasms became more frequent during the day, and the patient died at 2-30 P.M.

Post-mortem examination 19 hours after death. On cutting into the ascending parietal convolution a small cavity, about the size of a bean, was found. This cavity contained some of the antitoxin serum. Round the walls of the cavity some small hæmorrhages had taken place.

G. S., age 20, admitted into the J. J. Hospital on the evening of the 6th December 1898 with acute tetanus of two days' duration. The patient states that five days ago he received a small lacerated wound on the left knee and left elbow while playing with one of his friends.

The spasms occur about every half hour. Pulse 88; respiration 28; temperature 99.4° F. 5 c.c. of tetanus antitoxin serum were injected into the middle frontal convolution of the right side. Time occupied in injecting the fluid was about 20 minutes.

The wounds on the knee and elbow were excised. 5 c.c. of serum were also injected into the left buttock.

7th December.—The spasms have occurred very frequently since the operation. Pulse 72; respiration 32; temperature 101.2° F.

8th December.—Spasms more frequent. Pulse 104; respiration 36; temperature 102° F. Patient died in the afternoon.

Remarks by W. K. Hatch, F.R.C.S., Lieut.-Col., I.M.S.—The notes of the above cases were made for me by Major Quicke, who operated on them at my request, with the object of testing the efficacy of this method of treatment of tetanus. The serum was supplied to me by Professor Wright while in Bombay, and I understand he procured it from Dr. Roux. On one occasion Professor Wright was present at the injection, and in fact the operation was performed under his direction and by his special request.

The first two cases were extremely severe ones, and would have proved fatal in my opinion, under any method of treatment; the third case was a fair one to test the antitoxin treatment.

It seemed to me that the severity of the symptom was in all cases increased by the injection. The duration of the operation in each instance was 20 minutes, the fluid being injected very slowly, and I may mention that the perforation of the cranial bones was effected by the dental engine. It was observed in two of the cases that a small cavity was present in the brain at the site of injection, and that this cavity contained a small quantity of the fluid. As the *post-mortem* examination was made 20 hours after death, it seems that absorption of the injected fluid is not very rapid.

I should hesitate to use this method of treatment on another occasion except, perhaps, in the very earliest stage.

CASES FROM HOSPITAL PRACTICE.

By A. POWELL, M.B., M.Ch.,

Kalain, Cachar.

(i).—Accidents following Hysterectomy.

CASE I.—*Phlegmasia Dolens*.—Hindu female, 60, suffering from severe hæmorrhage due to carcinoma of the cervix. Examination shewed a large cauliflower excrescence and considerable enlargement of the glands in both groins. Patient was very anæmic, and complained of a continuous boring pain in the region of the left sacro-iliac joint.

Local styptics failed to arrest the hæmorrhage, and plugging caused high septic fever by obstructing the discharge. The cauliflower growth and the cervix were then removed piecemeal with scissors and sharp spoon, but bleeding still continued if plugging were not employed, and the use of the plug invariably caused high fever.

September 11th, 1894.—The uterus was removed through the vagina,—not with any hope of cure, but to stop the hæmorrhage. The tubes and broad ligaments were divided between three double ligatures on each side.

Temperature in the evening was 100.2° F.; on the second evening was 100.8°, but there-

after quite afebrile. Pain continued about the left sacro-iliac joint, but there was no further hæmorrhage. Patient gained in weight and went home on the 1st October.

On the 4th October the left leg was found in a condition resembling phlegmasia, evidently due to thrombosis of the iliac veins. There was practically no pain, only a feeling of heaviness and tightness of the skin.

This condition continued till the death of the patient from internal recurrence of the cancer in August 1895.

The term "phlegmasia alba dolens" is to me a charming one, perhaps as accurate as the historic definition of a crab.

(1) "Phlegmasia" is an unwarranted assumption in pathology, simple thrombus, without any inflammation sometimes causing the affection.

(2) "Alba" is clearly out of place among our black and brown patients in India.

(3) "Dolens." In many cases the pain is slight and in some absent.

CASE II.—*Epileptiform Convulsions*.—Hindu, aged 28, said she had never suffered from fits of any kind.

A uterine myoma, the size of a nine months' pregnant uterus, was removed by laparotomy. The tumour extended very low down and into the broad ligaments, necessitating a very thick stump which was surrounded by a *serre-naud*.

Three hours after the operation the patient had a fit, the muscles of the upper extremities and face being thrown into clonic spasms. The pupils became widely dilated, and unconsciousness lasting two or three minutes ensued. The pulse during the attack was barely perceptible.

Six similar fits took place in the three days following. A seventh took place as I was tightening the *serre-naud*. It seemed possible that the wire was pressing some ovarian tissue or nerve, so I slackened it considerably.

There was only one more fit which was slighter, and took place four hours later.

Subsequent tightening of the *serre-naud* caused no recurrence.

CASE III.—*Intestinal Obstruction*.—Hindu, aged 30. A large myoma was removed by abdominal incision. The pedicle was thick and was treated with the *serre-naud*.

Patient did well till the fourth day, when there was considerable distention of the abdomen. An enema caused a slight motion and some relief to the distention. There was neither tenderness nor vomiting, so I ordered a seidlitz powder.

I had to leave home and did not return for two days when I found the patient had died just before my arrival.

A knuckle of intestine had slipped in between the pubes and the stump. Persistent vomiting had set in immediately after the purgative was given.

(ii).—*Cholera Antitoxin*.

I have received a number of enquiries concerning a cholera serum I was using two or three years ago.

I may say the serum proved a complete failure. It was tried in 14 cases with 10 deaths and 4 recoveries which seemed in no way influenced by the serum.

The serum was prepared from a horse at the farm of the Jenner Institute under Professor Macfadyen, and from a pony and a goat at Kalain.

All three sera had the power of quickly precipitating comma bacilli in fluid media, but in none of the three animals could any very marked degree of tolerance be induced; in fact the goat was killed by 20 c.c. of an emulsion, 16 c.c. of a similar one having produced little reaction twelve days previously.

(iii).—*Satyrasis and Prostatic Enlargement*.

Enlargement of the prostate is popularly associated, either as cause or effect, with an erotic disposition.

The following is a case in point. I am inclined to consider the hypertrophy at such an early age as the cause rather than the effect of the patient's disposition.

A European, aged 25, who bore the reputation of a veritable satyr in a district where the standard of sexual morality is by no means bigoted, consulted me for constipation.

He was directed to use an enema, but complained that he could not insert it.

In shewing him how to use it, I found, owing to some obstruction, I had to pass the nozzle almost directly backwards.

Examination showed this was a uniformly enlarged prostate, smooth, firm and measuring 2½ inches along its vertical curve.

It was quite free from pain, tenderness or inflammation, and had never interfered with micturition. He had never suffered from gonorrhœa or prostatitis.

His erotic propensities had won from his fellows several soubriquets more complimentary to his virility than his morality.

(iv).—*Cure of Hydrocele by Injection of Comma Bacilli*.

In two cases I have found tapping the hydrocele and injecting an emulsion of comma bacillus set up a mild inflammation which soon subsided, and has apparently radically cured the disease, as there has been no recurrence at intervals of nine and twenty months respectively.

The emulsion and dose were the same as in Haffkine's inoculation.

It was intended to "kill two birds with one stone,"—to cure the hydrocele and add to the numbers for testing the protective value of the inoculation.

CASE OF ACUTE PULMONARY ŒDEMA DURING CHLOROFORM INHALATION—DEATH.*

By J. B. SMITH, M.B., M.Ch.

CAPTAIN, I.M.S.

(Continued from page 330.)

Post-mortem ON 12TH SEPTEMBER 1885, AT 9 A.M.

Heart, 4 oz. of clear fluid in pericardium. Walls of heart, especially R. side, were affected with extensive fatty deposit along vessels. Valves healthy except some calcareous deposits on mitral; cavities empty, no clots.

Lungs in œdematous condition, and completely filling pleural cavities. On section frothy matter from bronchioles and serous fluid oozing from substance of lungs. Eight oz. of clear fluid in each pleural sac.

Stomach dilated with air and but little fluid in it.

Liver slightly enlarged, but otherwise nothing abnormal.

Spleen much enlarged.

Kidneys normal to naked eye.

Larynx and *pharynx* examined, but nothing abnormal noticed.

Bladder, fragments of three stones.

Brain not examined, as the wife of deceased was waiting to remove the body.

The only reference to acute pulmonary œdema I can find in the ordinary text-books is in Flint (p. 272): "That mechanical hindrance to the outflow of blood from the pulmonary veins, as by mitral stenosis, is capable of producing this elevated tension seems *a priori* probable; but this is a condition present in only a minority of cases of pulmonary œdema, and the experiments of Welch, in reference to the cause of œdema of the lungs, have shewn that the obstacle must be greater, in order to produce œdema, than can well occur in man. He, however, found that an efficient cause of pulmonary œdema exists in paralysis of the left side of the heart, the force of the right side being not at all or less impaired. Neither general paralysis of the heart nor weakness alone of the right ventricle suffices to produce pulmonary œdema. But, as was proved experimentally, it appeared when the left ventricle was so disproportionately weakened that it could not propel into the general circulation the same amount of blood propelled by the right ventricle into the lungs, the blood accumulated in the lungs until the tension in the pulmonary capillaries became sufficient for the transudation of serum through the vascular walls. The assumption that

disproportionate paralysis of the left ventricle is the immediate cause of acute general pulmonary œdema in man would explain many of its singular phenomena. Such a condition of the heart can be readily supposed to develop suddenly, to rapidly disappear, and to arise during manifold diseases, especially when the general activity of the heart is impaired; for it is not denied that the general force of the heart is weakened in most cases of pulmonary œdema, and, indeed, it is hardly conceivable that the left ventricle should lose its wonderful power of adaptation to the obstacles which it has to overcome in propelling the blood before the whole heart had suffered in its function. Œdema of the lungs occurs during the death-agony, when the left ventricle loses its power more rapidly than the right, or dies faster, so to speak. While the hypothesis of Welch as to the immediate cause of pulmonary œdema is not controverted by clinical facts, but on the other hand seems to explain them better than any other, we as yet know no means of determining in man the relative force of the two sides of the heart, and upon the absolute strength of either right or left ventricle only subordinate weight is placed. Other influences adduced to explain the cause of œdema of the lungs are impaired nutrition of the walls of the pulmonary capillaries and vaso motor disturbance." He then proceeds to give the symptoms of œdema as:—"Increased frequency of respiration, cough, and serous expectoration."

The name *acute* pulmonary œdema distinguishes cases in which the œdema occurs suddenly to such an extent as to give rise to great dyspnoea, sometimes quickly causing death by apnoea. Osler says (p. 636):—"The pathology of pulmonary œdema is not always clear. Two factors usually prevail in extreme cases—increased tension within the pulmonary system and a diluted blood plasma." Quain's dictionary does not describe any acute form.

It will be noticed that the symptoms I have described are much more acute than those described by Flint, and the condition might, I think, be accurately described as *fulminant*, for they came on with lightning-like rapidity.

The treatment recommended by both Flint and Osler for the acute cases, accompanied by cyanosis, is venesection, "if the action of the heart be not extremely feeble." (Flint.) In the case I have referred to artificial respiration with stimulation was sufficient to twice bring him round and might, perhaps, had it been vigorously applied, have brought him round again the third time. One thing impresses me strongly, and that is, that in similar cases water or other fluids should be withheld for a very considerable period after the attack. I do not believe that venesection would, owing to his whole lungs being filled up with froth, have saved him in

* Paper read at the Bombay Medical and Physical Society, July, 1899.

the first instance. One or two points I would invite attention to :—

1. The almost total disappearance of symptoms between the attacks implying, I believe, a cause spasmodic in its action.
2. That between the end of the second and the beginning of the third (and last) attack a period of $1\frac{1}{2}$ hours intervened.
3. Death took place nearly three hours after the complete stoppage of the chloroform.
4. The absence of any marked affection of the mitral valve. Calcareous deposit with fatty deposit on the walls of the heart must be fairly common in elderly men, yet without causing acute or fulminant pulmonary oedema during chloroform inhalation.

The amount of chloroform used may seem large perhaps, but it must be remembered that in September Shikarpur is pretty hot, and there is a good deal of wastage off the inhaler and in measuring the quantity in a minim measure.

This case is reported as it may prove interesting, being an unusual complication of chloroform inhalation.

NOTES ON CERTAIN CASES OF HYPERPYREXIA.

By C. DUER, M.B., F.R.C.S.,

CAPTAIN, I.M.S.

Junior Civil Surgeon, Rangoon.

(Continued from page 360.)

THE first point to which I desire to draw attention is the diagnosis of these cases of sudden death from hyperpyrexia. Many are, I believe, returned as sunstroke, heat apoplexy or siriasis. For myself I may say at once that during seven and a half years spent in many parts, and some of the hottest of Bengal Presidency, in Assam and Burma, on the line of march and in camp, I have never seen a case of siriasis. Other officers in the Medical Services have told me the same thing. I consider these cases to be due to malaria: unfortunately I have no evidence from the plasmodium point of view to offer.

Typical cases of ague, in which the temperature rises to 105° are not uncommon, and it is difficult to understand why it should not at times reach a higher and dangerous point. How often also in malarial fever is the shivering of ague represented by merely a passing chilliness, a slight chilliness down the spine, or not at all. I am not aware that the cases of hyperpyrexia under discussion occur in non-malarious localities. Within recent years, during exceptionally hot weather in England and especially in London,

one has read of a good many deaths from sunstroke. In these I am informed that so far from the temperature being high, it was subnormal.

We must remember that fatigue, and exposure to a hot sun, which has undoubtedly a markedly depressing effect, are very likely to bring on an attack of malarial fever in malarious localities; and it is just these cases that are likely to be diagnosed as sunstroke. With regard to recognising the condition of hyperpyrexia it must be remembered that perhaps the commonest cause of unconsciousness that we in India and Burma have to deal with is hyperpyrexia, and therefore if called to a case of unconsciousness, the first thing to do is to take the temperature; and the only reliable way is by placing the thermometer in the rectum. The axillary temperature is quite unreliable in these and all other cases. The temperature of a child should always be taken in the rectum; that of older persons, if conscious, in the mouth; and if unconscious, in the rectum.

Again, should we find a fever patient apparently sleeping heavily and snoring loudly, we must not forget the possibility of his being really unconscious from hyperpyrexia. In conclusion I will mention a few more illustrative cases.

A Subaltern in the Sappers, whom I had treated several times for slight fever, sent for me one very hot afternoon. His temperature was 106.5° ; and he was somewhat delirious. Sponging with ice cold water failed to bring down the temperature materially, and while this was being carried on he had an involuntary loose foetid evacuation of the bowels. (This I may mention is not an unfrequent occurrence in these cases of high fever.) He was then placed in a cold bath, and the temperature soon began to fall. Next day he was practically well and had no return of his fever.

A strong middle-aged Pathan, on the day of his discharge from the Dera Ismail Khan Jail, was seized with fever, the temperature rising to 108° at about 6 P.M. He was placed out of doors on a *charpoy* and deluged with cold water. He soon recovered consciousness and walked off, apparently quite well the next morning. I see no reason for considering this a case of siriasis. The man was exposed to no exceptional conditions. No doubt a high external temperature favours a high rise of temperature in malarial fever.

Some four years ago a very well known officer in the Punjab Frontier Force, a man of excellent physique, and a great sportsman, who had been accustomed to any amount of exposure to the sun and heat of the Punjab Frontier for over ten years, got fever one day, and died with a very high temperature the same evening. His death was, I believe, returned as due to heat apoplexy, but this to my mind is difficult to accept as the correct cause.

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THE PROPOSED SALE OF POISONS ACT.

WE are glad to be able to state that there is some immediate prospect of an Act to restrict the sale of poisons being introduced by the Legislative Council of Bengal. This is a very ancient question in India, and one which ever since the days of Dr. F. Mouatt in 1843 successive Chemical Examiners have urged upon Government in their annual reports; but Government has hitherto declined to take action in the matter, usually assigning as a reason certain obvious difficulties in the way of carrying out the provisions of such an Act.

We are indebted to a correspondent, who has paid particular attention to the subject, for a valuable criticism on the proposed Act. At present, it is understood, Government only propose to introduce the Act to regulate the sale of white arsenic, which is admittedly the most dangerous and most frequently used poison in India; but, as our correspondent points out, there is seldom any danger in making such an Act full and comprehensive. The greater includes the less, and while it would most frequently be put in force against the illegitimate use of white arsenic, there could be very little harm in holding it in reserve against the abuse of other poisons. One argument has been frequently used to show the supposed impossibility of enforcing such an Act is that "poisons grow on every hedge." This fact applies to vegetable poisons in every country, and if it has been found possible to control the sale of such for illegal purposes in other countries, there is surely every reason for attempting to do so in India. Although arsenic is *facile princeps* the poison against which we desire to see legislation enacted, yet there are many others of scarcely less importance. Opium and aconite are freely used for purposes of infanticide and suicide.

In the period 1889 to 1893, out of 236 cases of suicide by poison in Calcutta and suburbs, 23 were due to arsenic, no less than 167 to opium and 46 to other poisons. In the extremely valuable paper read at the Indian Medical Congress in 1894, the late Major J. F. Evans and

Dr. Chuni Lal Bose showed that suicide by poison was 19 times more common in Calcutta than in England. Moreover, as the chief object of the proposed Act is to check the killing of cattle by poison, why should the Act be limited to one means only of attaining this nefarious end? Every one knows of the use of the "*sui*," made from *abrus precatorius*; why should this method be excluded from the operation of the Act or the use for the same purpose of snake-poison as pointed out by Mr. Hankin some years ago? Indeed, why should the Act be limited to cattle-poisoning,—why should it not attempt to check the even more important human poisoning? Our correspondent gives a list of poisons which he considers it desirable to extend the Act to include. It includes not only white arsenic but red realgar, yellow orpiment, *abrus precatorius*, aconite, strong ammonia, strong acids (including oxalic and carbolic), phosphorus, prussic acid and the cyanides, opium, its alkaloids and preparations, strychnos, nux vomica, chloral, chloroform, cantharides, corrosive sublimate, datura, belladonna, hyocyamus, *plumago rosea* (the *lal chitra* of the abortionist), croton seeds, *balanites Roxburgii*, euphorbia, *hydrocarpus*, *nerium odoratum*, *digitalis*, *physostigma*, *cannabis sativa*, *ecbalum elaterium*, *citrullus colocynthis*, antimony and its salts, copper and its salts, and many other poisons which might well be included in a list, among them cocain, the abuse* of which is increasing in India.

One objection formerly urged by Government against attempting to control the free sale of arsenic was that other poisons, chiefly vegetable, will be used instead. This is only to a limited extent probable. The number of poisons which are commonly known is small: they are chiefly opium, datura, nux vomica, oleander, aconite, *abrus precatorius* and *cannabis*. In the case of opium experience has shown that its use can be very largely controlled without imposing any hardship on those who require it for legitimate purposes or merely for its euphoric effect.

* A Civil Surgeon* recently informed us that in his district, in Bengal, the sale of cocain was very considerable, and that nowadays it is much used as a narcotic or stimulant in place of opium by well-to-do natives, as Marwaris, zamindars, and even schoolboys. He states that it is openly sold in the bazars by the *pan*-sellers, and to prove it he sent a servant for four annas worth, and obtained it from a *pan*-seller without difficulty !!

Datura poisoning is fortunately generally non-fatal, and aconite, though it grows wild in the hills, is largely an imported drug, whose sale could easily be controlled. As regards *nux vomica*, though the tree is not common, yet the seeds can easily be purchased, and it should certainly be brought within the operation of any Sale of Poisons Act. In the same way there should be a prohibition of the sale of oleander or *abrus*, as these articles are of little or no use from a legitimate or medical point of view. The researches of Dymock, Hooper, Warden, Waddell and other chemists in India have clearly shown that, should criminals attempt to strike out a new line in vegetable poisoning owing to older methods becoming impossible from legal restrictions, it will not be beyond the resources of chemical science to compete with them and devise new means for their detection.

The success of any Act for restriction of the sale of poisons will much depend upon the framing of the section dealing with licenses. Our correspondent recommends that all licenses should be for one year only, and be granted only on payment of a fee. The conditions under which the license is granted should be clearly printed on the back of the form, and any breach of its provisions should, *ipso facto*, render the license null and void; moreover as far as possible, licenses should only be granted to medical practitioners, chemists and respectable merchants. If poisons are purchased for the destruction of vermin, &c., or for use in the arts, the quantity that may be purchased at one time should be stated. Another important point is that all vendors of poisons should keep a register of purchases and sales of poisonous drugs with full particulars as to name, age, occupation and residence of purchasers, with the object and date of purchase. The signature, witnessed mark or thumb impression of the purchaser should be entered on this register. The use of poison labels on all bottles, parcels, &c., should be insisted upon. One other practical point is noted by our correspondent: that is, that it would be necessary in the Act to make some provision for inspectors; and, moreover, these inspectors would need some preliminary training to enable them to identify the appearance and nature of the poisons exposed for sale.

Many other suggestions might be added, and we hope that now that it is the intention of the Government of Bengal to introduce the much-needed Act to control the sale of arsenic, they

will see their way to extend that Act so as to include the very many poisons so often fatal to human life.

SURGICAL TRAINING FOR MILITARY SURGEONS.

WHILE admitting that there was much truth and also some exaggeration in Professor Ogston's criticism of the Services, we pointed out, in our last issue, that not only are there many capable and experienced men in all branches of the Service, as proved by the result obtained in the Tirah and Egyptian Campaigns, but that the civil side of the Indian Medical Department also possessed attraction for those who wished for an Indian career and afforded opportunities to medical officers of keeping up their surgical work fully abreast of the times.

It is true that in the purely military service there must be men who, posted at small up-country stations, have little enough of professional work, and in such cases the man himself is perfectly sensible of a gradual loss of professional zeal and knowledge; his days are occupied in other ways than by medical work. If he is a sportsman he makes the most of the opportunities afforded him in that line; if he is not, he takes up other pursuits and amusements. After a number of years employed in such a fashion with little to stimulate him professionally, he frequently becomes less interested in purely medical studies and is apt to be inclined to avoid rather than to seek for the exercise of his professional abilities. This is true more particularly as regards certain branches of his profession, and he may be often glad to hand over the charge of a serious case, which may have suddenly been placed under him, to the care of others who have not grown rusty in their professional work. Having lost confidence in himself he does not wish his patient to suffer, and may even state his case in this manner to his patient. Sometimes his honesty of purpose is misunderstood, and he may be thought to be idle or at all events anxious to avoid responsibility. It is difficult to blame a man under such circumstances as these; it should be the endeavour of the authorities to mitigate as far as possible the circumstances which tend to bring about such a result.

Without practical work it is impossible for any man, however enthusiastic in his profession, to keep himself up to the mark; reading th

standard medical works and perusal of the leading medical journals will do much, but it cannot replace practice. It is hardly to be expected that a medical officer should be able at a moment's notice to perform a difficult surgical operation, when he never has had an opportunity of doing more than the simplest kind of surgery. So far, the only remedy that has been suggested is "study leave," but even this does not make matters much better; it is again all theory, instead of real performance. Simply seeing others, however skilful, does not satisfy the surgical craving, and although much may be learnt by watching a really good surgeon, yet it does not give to the spectator surgical skill in manipulation. The memory is refreshed, and new facts may be learnt, but the essential thing wanted is not obtained. Would it not be possible to make arrangements for medical officers, both in India and in England, to work at civil hospitals and have a share in operations? Under the guidance of the officer in charge of a civil hospital, military medical officers should be allowed to assist and perform operations. We venture to think that in India, at all events, there would be no difficulty in forming a scheme, and we believe the medical staffs of the larger hospitals would be glad to give every assistance in their power, and would endeavour to work harmoniously with officers who were allowed these advantages. If this were done, military officers would not lose their interest in surgical work, and could not be reproached for not having ever performed a capital operation; every opportunity would be afforded them of operating both on the dead and living body. A little trouble on the part of the authorities would enable some such scheme to be set on foot, and we feel satisfied that it could be made to work satisfactorily and smoothly.

DISTRICT MEDICAL HISTORIES.

WE are very glad to find that Colonel T. H. Hendley, I.M.S., C.I.E., is arranging for the compilation of medico-topographical accounts of all the districts in Bengal. In a circular recently issued to all Civil Surgeons in Bengal he gives full and detailed instructions as to the preparation of these reports. Those who are acquainted with Colonel Hendley's *Medico-Topographical Account of Jeypore*, published in 1895, will

know what is wanted, and will be able to appreciate the value of such records. The German Emperor ordered, some years ago, the compilation of similar histories for every military cantonment in the German Empire. A glance at the suggested table of contents will show the amount of valuable information which will be collected in these histories. A short account of the geography, geology, and water-supply of each district will be followed by chapters on the products of the district, mineral, vegetable and animal, on the population of the district, races, castes, occupations, trades, education, languages, dress, &c. A brief note will be needed on the means of communication by roads, rivers and railways. Then will come a chapter, which to some Civil Surgeons will be a labour of love, *viz.*, a brief history of the district, to illustrate the prosperity and health of the inhabitants, with any information which can be collected upon anthropology, folk-lore, ancient customs, superstitions, &c., which may directly or remotely bear upon health and disease. The next chapter will not be difficult to compile; it concerns the meteorology and climate of the district, with short accounts of any great natural phenomena, as earthquakes, landslips, floods, or cyclones, the extent of the monsoon rains, &c. More especially will it be useful to study the effects of climate on disease: for instance, the effects of normal, deficient and excessive rain on malaria, cholera, and other diseases. A map would show the situation of the chief towns, villages, dispensary sites, &c. Another chapter will be devoted to a more detailed description of municipal towns, giving details as to area, wards, water-supply, drainage, tanks, rivers, roads, lighting and public institutions, schools, jails, hospitals; asylums, leper and lunatic; slaughter-houses, burning *ghats* and cemeteries; the incomes of the municipalities and the amount of medical relief provided by Government and by local bodies; any unusual facts about births, deaths or marriages, notes about fairs, places of pilgrimage, sanitary arrangements in towns, staff of sanitary officers, disposal of refuse, &c.

Chapter IX is intended for a full detailed account of all hospitals and dispensaries in the district, with details of cost, upkeep and maintenance. Another chapter will deal with medical aid, a history of epidemics, sanitary camping grounds, contagious hospitals, &c., official and private medical aid, the number of educated

practitioners, the number of indigenous practitioners (*baids, hakims, jurrahs, eye-couchers, &c.*). Information should be given also about indigenous drugs, sale of poisons, about midwifery, and female medical aid generally, views or superstitions of the people about smallpox, vaccination and inoculation; prevailing ideas about local diseases. Then will come an account of the chief diseases—malaria and its sequela, cataract, stone, bowel-complaints, worm and skin diseases, elephantiasis and goitre if they exist; venereal diseases, and a note on the incidence of malarial fever among peoples inhabiting *terai* or other notoriously malarial places, especially with reference to the now much-talked-of immunity against malaria. As the Civil Surgeon is usually the Superintendent of the district jail, it will not be difficult to make some useful remarks on crime in the district and on the jail itself, also on medico-legal matters, number of *post-mortems*, deaths from violence, poisoning, abortion, &c., or local methods of torture, as for example, the *bansdola*.

Another chapter will deal with food prices, staple foods of the inhabitants, principal crops, prices of foods for a series of years and in certain famine years, on the use of *kesari* (*lathyrus sativus*) and its effects, the clothing of the people, &c., emigration, congested districts, recruiting for the army and police, &c. The final chapter will give information as to any special laws or regulations in force in the district, a list of former magistrates and medical officers, with dates of incumbency, and as complete a bibliography as possible of all books and publications relating to matters of medical interest in the district or written by medical men.

It will be seen that the above outline is very comprehensive, and the volumes, when completed, will form authoritative and valuable medical histories of each district. As to their value to the individual Civil Surgeon, it is needless to dilate; we need only recall the individual experiences of every Civil Surgeon newly arrived in a district. All will remember how much they had to learn before they understood the working of their district; when these volumes are completed, a medical officer, newly appointed, will only have to spend a few hours reading the history of his district, and he will know more about it than under present conditions he is able to learn in half a year. Colonel Hendley is giving the fullest aid that his

own office can afford to rid the Civil Surgeon of the most troublesome portion of his work, *viz.*, the compilation of vital statistics, &c. That all the histories will be of equal value we cannot expect, but that all will be of great value we have no doubt. In the meantime it has been decided to commence the work in a few selected districts; in a short time we hope it will be possible to have histories of all districts. The Civil Surgeon with a Hunterian turn for writing will compile a history not only interesting but valuable from a literary point of view, and in every case future generations of Civil Surgeons will have reason to rejoice when they find ready made for them a complete, accurate and valuable history of all that concerns them in their districts.

To the epidemiologist they will also be invaluable, and they will do much to collect our knowledge on the little-known subject of the geographical distribution of disease in India.

LONDON LETTER.

SCARLATINA IN INDIA.

By a happy coincidence the question of the prevalence of Scarlet fever in India and other tropical countries has been simultaneously raised in the *Journal of Tropical Medicine* and in your own pages. The subject has been from time to time discussed in the *Indian Medical Gazette* since the year 1870. It has been made quite certain that Scarlatina has been repeatedly imported into India by means of troopships, and that in this manner small outbreaks have arisen in military stations and among civil communities, both on hills and plains. It has also been conclusively proved that these epidemics are very limited both in space and time.

It has been inferred that India and other tropical countries possess an immunity as regards this disease, that is to say, that the microbe which presumably causes it, belonging as it seems to do to the class of obligatory parasites, does not find in tropical conditions favouring circumstances for life and propagation. Once admitted into the individual, it appears to give rise to the same pathological phenomena as in temperate countries. It must therefore be during the interval of transit from the diseased to the healthy subject that it encounters an environment inimical to either existence or virulence or both. The exact truth of its

natural history, somatic and extra-somatic, remains to be worked out, but the facts already ascertained justify these provisional conclusions. The curious and really important fact, which the papers to which I have referred place in evidence, is that an eruptive, febrile disease, presenting close if not complete clinical resemblance to *Scarlatina*, arises sometimes in India *de novo*, and that occasionally such cases occur in groups and seem to result from communication. I have myself seen such cases singly and in groups in Calcutta and at Darjeeling, and they have been met with by others, as the literature on the subject shows. In these instances the question of importation has been held in view; but the circumstances of their occurrence were, in most cases, such as to render this mode of origin extremely unlikely; and it seems absolutely true that, as in imported cases, so in these autogenous cases the power of infection is exceedingly weak, the incidence very limited, and the duration of the outbreak short. The aspect which has been displayed is that of a disease epidemic under favouring condition, which is capable of implantation or even origin *de novo* but incapable of propagation. The matter is therefore one of profound interest both pathologically and epidemiologically, and it is to be hoped that, as opportunity offers, by general, clinical and bacteriological methods, the points above mooted will be eventually cleared up both as regards India and the tropics generally.

THE PHYSICAL REQUIREMENTS OF THE PUBLIC SERVICES.

An important discussion took place in the Section of Medicine at the meeting of the British Medical Association at Portsmouth on the medical tests for admission to the Public Services. The time and place were well suited for ventilating questions which concern the efficiency of the services, the anxieties of parents and guardians and the interests of so many youths. The particular subjects of attention were—(1) propriety of existing standards of physical fitness; (2) the methods by which examinations for physical fitness are at present conducted; (3) the uniformity and fairness of such examinations; and (4) the time when they ought to be held, whether before or after the literary examination. On these points a considerable variety of opinions were offered, and the only subject on which the section appeared to be unanimous

was the stage of the competitive examination at which the testing for physical fitness should be conducted. In effect it was decided that the elimination of the physically unqualified ought to take place before the candidates are subjected to a trial of their intellectual capacity. The reason for this, which seemed to weigh with the section, was that it was cruel to subject youths to the pains of a tiresome literary examination and the disappointment of subsequent rejection, on account of physical incapacity, after they had passed it and perhaps passed it creditably. There is some sense in this view, but it does not wholly express or meet the hardships of the case, for rejection immediately before examination, does not take into account the wasted time, labour and expense of preparation, or the disappointment and demoralising effect of failure after years of study and expectation, both with a special object. The real truth is that physical fitness should be, as far as possible, tested and ascertained before a boy commences to study for any particular service in which this is laid down as a necessary qualification. The State cannot be expected to perform a service of this kind for the multitude of youths scattered throughout the Empire who may contemplate preparing themselves for State employment, nor could it be reasonably held to abide by the results of such early examination, so that a further testing immediately before or after the examination would still be necessary. It is the civil practitioner or the retired army or navy surgeon who should be entrusted with this duty; and by a little study of the regulations issued by public departments and boards of examination, it could be fulfilled with sufficient success to indicate whether a boy should undertake the task of preparative study or not just as the report of the head master of his school decides, whether he possesses the necessary intellectual capacity and industry for same end.

Some public departments,—the Admiralty for example,—pointedly recommend these preliminary medical examinations, and there can be no doubt that they ought invariably to be made; and if this became the practice, specialists would be forthcoming, who would qualify themselves to give sound advice. In civil life, physical fitness, if at all enquired into, is considered after selection for employment; but everything depends on the kind of employment and the degree

of physical capacity which it demands. In the Army and Navy, physical capacity must necessarily hold a high place, and the question has frequently arisen, whether the element of competition should not apply to this as well as to intellectual endowments by assigning marks for physique, endurance, robustness, agility, and so forth. This has hitherto been found impracticable, and standards have been laid down for the guidance of boards, which cannot be pronounced unreasonable nor unfair; nor can boards be accused of applying these with undue severity or eccentricity.

THE CULTIVATION OF THE QUARTAN PARASITE IN THE MOSQUITO.

Major Ross has telegraphed from the West Coast of Africa that he has succeeded in cultivating the parasite of quartan fever in anopheles the genus of mosquito in which the tertian and summer-autumn parasites have already been grown. This is an important announcement, and in response to Major Ross's appeal for additional workers, Mr. R. Fielding Ould, M.A., M.B., Oxon., has been deputed to join him at Sierra Leone, and assist him in carrying on his investigations.

K. McL.

9th September 1899.

Current Topics.

TESTS FOR THE PUBLIC SERVICES.

It cannot be said that the discussion of medical tests required for admission to the public services at the recent British Medical Association meeting have advanced the question very much, and as Deputy Surgeon-General Cayley pointed out, the unfortunate difference of opinion between the section of medicine and the section of ophthalmology, as to whether the physical examination of candidates should follow or precede the educational tests, will not tend to give weight to the diametrically opposite resolutions arrived at. A little management would, we think, have prevented such a contretemps. One point in Sir Dyce Duckworth's introductory remarks will surely be agreed upon by every one, *viz.*, the necessity for sending up the candidates in batches to be examined. To expect a board of medical officers to carefully examine fifty or sixty young men in one day is absurd and only leads to mistakes. If the War Office or Navy were to issue papers on the same lines as the Insurance Offices do, and appoint leading civilian or military medical men as examiners in all the leading military or naval centres, and if Government

would pay for these detailed reports as the Insurance Companies do, then much subsequent trouble to candidates and their parents would be avoided. Government would be saved the risk of bad lives being hastily "passed" by an over-worked board, and parents would often be saved the expense of coaching fees for boys who could not pass the medical tests. This, of course, only applies to candidates for commissions or appointments in the superior ranks of the services, civil and military.

VACCINATION IN ENGLAND.

In spite of the "tremendous experiment" of last year, it is very satisfactory to see that at the recent B. M. A. discussion on vaccination, there was a very general opinion that there had been in the past year a largely increased amount of protection against small-pox. Not only had more children been vaccinated, but the vaccination was better done. One speaker pointed out one drawback to the new glycerinated lymph, *viz.*, that it took 45 minutes to dry. By-the-by the law allows a certificate of "successful vaccination" for one mark only. In Bengal six points are now directed to be used.

MILITARY TITLES.

ALL medical officers are directed to invariably add their corps, department or service after their names or signature, as R. A. M. C., I. M. S., in accordance with Queen's Regulations, para. 2074 (No. 3676, P. M. O. H. M.'s Forces, India, dated 12th August 1899).

QUININE IN MALARIAL FEVERS.

THE American Medical Association recently was engaged in a discussion on the well-worn subject of the use of quinine in malarial fevers. It was agreed that, in distinctly intermitting attacks, quinine should be given several hours before the next expected attack; but in irregular or remittent types, the drug should be given in the period of decline of the fever. It was also universally agreed, and in this we thoroughly agree, that a mercurial or other hepatic stimulant should precede the quinine. It was pointed out that quinine given hypodermically was often precipitated by the "alkaline juices of the tissues." One speaker strongly advocated Bacelli's method of intravenous injection. On the whole, the American practitioners were against the hypodermic use of quinine. We believe, on the other hand, this method is becoming increasingly usual in India, and we believe it the best method in many cases.

PLAGUE DUTY IN THE MAURITIUS.

WE mentioned in our last issue that plague measures were meeting with much opposition in the Mauritius. We now learn from the U. S. Consul's report, dated 29th June, that "the people

have stoned the medical expert brought here from India, and beaten, bruised and torn the clothes of his medical colleagues and bolted, and barred their doors against the entrance of the sanitary inspectors."

Quare fremuerunt gentes? The "medical expert" is, as we have said, Captain J. S. Stevenson, I.M.S.

THE LAVERAN BODY IN BIRDS.

WE have much pleasure in publishing in this issue the results of a long series of careful experiments done in the laboratory of the Hyderabad Medical School under the direction of Lieut.-Colonel E. Lawrie, I.M.S. Though the mosquito malarial theory is fascinating and has been accepted more or less by many medical men, it is no reflection on them if we say that the majority of medical men are not in a position to judge for themselves; for instance, it has been already pointed out in these columns that assumptions are not facts, and it is well known that, although there are many facts in favour of the malarial mosquito theory, yet it is still little more than an hypothesis, and there are several gaps in the theory which are by no means filled up, even by the researches of the Italian observers. Therefore, we welcome intelligent criticism such as the Hyderabad Laboratory sends us, and their conclusions deserve the fullest consideration at the hands of workers at this fascinating theory. We are sure that Dr. Lawrie would only be too glad to offer the use of his laboratory to any medical men who wish to confirm, or, it may be, confute, his results. In fact, the Government might, with very little cost or trouble, order a small skilled committee to assemble at Hyderabad to examine the specimens and test the results of the work done in this subject. Such a committee could easily be formed from medical officers of both services in Madras; there are several men there who have done work in this direction, and who are skilled microscopists.

THE IMPERIAL BACTERIOLOGIST'S REPORT.

THE very day after this interesting report was received, news came that the Imperial Laboratory at Muktesar had been accidentally burnt down.

Captain Leonard Rogers, I.M.S., M.D., F.R.C.S., who officiates for Dr. Lingard, on leave, submits the report. The work done in the laboratory has been largely preliminary, testing the various methods of protective inoculation against rinderpest. Mallein has been made, and quantities were being kept for use in outbreaks of glanders. Tuberculin has also been made, but the amount of tuberculous disease among cattle in India is not known. The disease certainly exists, as Major Raymond, A.V.D., has recently informed us, but it was not till the use of tuberculin became common in England that the extent of

the disease became known. Captain Rogers devoted some time to testing the conclusions of the Royal Society's Tsetse-fly Report, as it is almost certain that the Surra of Indian horses is identical with the South African disease. As already announced in our columns, a supply of locust-killing fungus was kept at the laboratory. The preparation of horses for a supply of tetanus antitoxin was begun, and also the examination of the spinal cords of dogs suspected of having had rabies was being arranged for. However, the important rinderpest experiments took up most of the time and attention of the bacteriologist. The report gives a clear and critical summary of all the various methods in use to fight this disease: (1) The bile method of Koch; (2) the glycerinated bile of Edington; (3) the defibrinated blood of salted animals; (4) the simultaneous method of Turner and Rolle. Rinderpest has existed for centuries in India, and owing to an acquired immunity, it is far from being so fatal a disease as when introduced within recent years into South Africa. It would appear, therefore, writes Dr. Rogers, that the serum method or a modification of it, so as to give a slight attack with a sufficiently long immunity, will be best suited to conditions met in India. A full account of very interesting experiments then follows and of inoculation of infected cattle in the Bareilly District; in fact, the experiments promise to lead to the adoption of a practical method of diminishing very materially the great mortality from rinderpest in India.

In conclusion, we express a hope that the reconstruction of this invaluable laboratory may be undertaken at once, and that temporary arrangements to carry on the valuable work will be possible.

COMBINED MALARIAL AND ENTERIC INFECTION.

CAPTAIN J. G. McNAUGHT, R.A.M.C., sends us a note in continuation of his remarks on a case of combined typhoid and malarial infection in our October issue (page 354). The parasite found in the case given was of the summer-autumn type and was twice found during the enteric attack; both pigmented and unpigmented amœbæ were found and also crescents. In another case, in same group, during convalescence, an attack of ague occurred, and numerous pigmented parasites were found.

These cases are interesting, as showing what real "typho-malaria" is, namely, a combined infection. Many such cases are now on record, the malarial parasites being usually found preceding the enteric attack or during convalescence; during the height of the attack the enteric germ being the more masterful has its own way, thus, as we said before, illustrating the Hippocratic maxim, "*Duobus morbis simul obsidentibus vehementior alterum obscurat.*"

EXAMPLE AND PRECEPT.

We are very glad to see that His Excellency the Viceroy intends to be inoculated against plague before making his cold-weather tour in the affected areas.

REFORMS IN FIELD HOSPITALS

A RECENT number of the *Journal of the U. S. I.*, contains an article on Field Hospitals by "M. Ch." which merits very careful consideration. He suggests radical changes in the composition of the hospitals to fit them for hill warfare, putting into a concrete form the general recommendations we made on the subject in our issue for July 1898.

The Indian field hospital, as far as equipment is concerned, is wonderfully complete; but in an unknown hill tract, devoid of roads, like Tirah, this very completeness was a source of weakness. Other causes, such as bad transport, helped to disable the hospitals, but their bulk was their great drawback.

We are in full accord with "M. Ch." when he advocates the hospitals moving with only indispensable articles. The great object is to get into position to treat the wounded promptly. By so doing their sufferings are lessened, and chances of recovery increased. It is better to be on the spot with only a few necessary articles, than to be struggling, two days behind the main body, with an unwieldy complete hospital. The latter was no uncommon occurrence in Tirah. After Dargai, and on the Bara march, the two occasions on which a large number of wounded had to be treated, the greater part of the work was done with materials from the panniers and companions. The complete three months' equipment was generally hopelessly blocked some distance in the rear. Most of those so attended did well, and we may presume that they would have done even better if they could have been attended to with greater promptitude. There was sometimes a delay, owing to only half the *personnel* of the hospital being available, the other half being employed on transport and baggage duties.

The obvious remedy for this is to cease carrying superfluous stores on the march, and to extend and develop the system of base and advance depôts of medical stores. In Tirah there was never any delay in forwarding dressings, etc., from the depôts; the only delay was when the articles were not in stock.

With regard to the carriage of the reduced hospital by coolies, we cannot entirely agree with "M. Ch." Good mule transport in nearly all cases is preferable to coolies. There is no place where a field hospital is required, that mules cannot go. Over steep, bad ground they are quite as quick as coolies; they are more easily kept together, and stand exposure, hard work, and short rations better. A cooly's load is more easily taken up and put down, but this

is not always an advantage when near the fighting line, or when being "sniped" on the way.

"M. Ch." has also assisted in the solution of the dhooly problem. We quite agree with him that the present dhooly should be banished entirely, in hill campaigns. It has been tinkered at for ages *till now it is a palki, a bed, a tent, and a general godown all in one*, and until roads were made in Tirah was *about as serviceable as an omnibus* would have been in the same place. Any substitute for it will be welcomed, provided it is light and handy. The particular form is practically immaterial. Nothing can be devised, which will be free from faults, under all conditions, and a multitude of patterns is not desirable. For the conditions of hill warfare speed is the first consideration, and comfort comes next. Where the two cannot be combined, then let us have speed. Retiring rear guards soon learnt in Tirah to sprint from ridge to ridge over bad ground, and the ambulance must be able to keep out of their way, otherwise one wounded man leads to others, until all are brought to a standstill.

We should like to supplement "M. Ch.'s" article by calling attention to the want of a trained ambulance corps in India. Any cooly, caught fresh from the bazaar, is at present considered fit for ambulance work. Untrained, undisciplined, unwilling, he shirks his work on every possible occasion, and is never to be found when wanted if he has a chance of hiding. Men for this work should be regularly enlisted and trained, and kept together under the control of the medical department.

We would cordially recommend "M. Ch.'s" article to the notice of the medical services in this country. The Tirah campaign tried the field hospitals as highly as they are ever likely to be tried again, and showed clearly that their one grave fault was their want of mobility. His proposals all aim at removing this defect, and they have the advantage of being as reasonable as they are practical and easy of accomplishment.

ANOTHER CASE OF SCARLATINA IN INDIA.

SINCE our last note on this subject we have received a very interesting case of scarlatina in an adult in India from Captain Victor E. H. Lindesay, M.B., I.M.S. The patient was a well-known medical officer (a Major, I.M.S.) in Multan. The fever began on 2nd October 1898 in the train *en route* from Dalhousie to Multan. On 4th October a bright scarlet punctiform rash appeared with local cedema of hands and arms. The rash disappeared on 8th day of illness; there was sharp fever up to the 6th day, and albuminuria from 4th to 9th day of illness; there was also tonsillitis, pharyngitis, otalgia and strawberry tongue. There was slight articular rheumatism for four days during the early part of the illness, desquamation from 8th to 13th day. There ap-

pears to be no doubt of the correct diagnosis—scarlatina. No trace of direct infection could be made out, but the patient had come from Dalhousie, and it was known that in the previous months there had been two or three cases diagnosed as scarlet fever in the family of an English officer at that station. They were under the care of Major Sexton, R.A.M.C. The Multan case was also seen by Major Adie, I.M.S., the Civil Surgeon, who called Captain Lindesay into consultation.

While we are on the subject, we may add that the cases referred to in our last issue as seen by Captain McNaught, R.A.M.C., at Quetta, were not in *children*, as we stated, but in British soldiers.

Reviews.

Skiagraphic Atlas of Fractures and Dislocations with Notes for the use of Students.—By DONALD J. MACKINTOSH, M.B., Medical Superintendent, Western Infirmary, Glasgow. (H. K. LEWIS, London, and JOHN TOMLINSON, Stanley Works, Glasgow.)

THE world waited some centuries for the Röntgen rays and their wonderful value is markedly shown in this Atlas. In most cases the skiagrams are perfect, and even where great thickness of tissue has rendered the process difficult, they are sufficiently accurate for all practical purposes. How often has a young practitioner wished for a window in the human body that he might look inside and be certain of his diagnosis; now, so far as the bones are concerned, his desire is fulfilled. Both to the student and to the teacher these plates will prove eminently useful. It would be quite easy to enlarge the skiagraphic plates to serve as wall pictures, in place of the often crude diagrams used by lecturers on surgery. There are in all 80 skiagraphic plates in this Atlas, of these 64 deal with fractures and dislocations. The rest give most valuable examples of the way in which skiagraphic processes may be employed for the detection of foreign bodies, tumours and malformations in various parts of the human frame. Conspicuous among the latter is plate 67 showing a tumour connected with the second metacarpal bone and causing deformity, by pressure, on the third metacarpal bone. With this plate before him the surgeon would have little difficulty in removing the tumour.

The letterpress accompanying the plates is somewhat scanty, but generally sound and to the point. In a future edition the author might, perhaps, be persuaded to give fuller details. May we express a hope that Dr. Mackintosh will continue his labours, and give us a pathological atlas on the same lines.

A System of Medicine. By many Writers. Edited by T. CLIFFORD ALLBUTT, M.D., LL.D., F.R.S. Vol. VII. London: MACMILLAN & Co., LD., 1899. Price 25s.

THE seventh volume of this great system of medicine has just been published, and the eighth and concluding volume is announced as ready. It was at first estimated that six volumes would be sufficient, but as the editor says, the estimate proved erroneous owing to the "extraordinary movement and expansion in our art and in the sciences ancillary to it." The increased bulk is also due to a determination to have special departments of medicine as the larynx, skin, mental and tropical diseases dealt with as completely and intimately as experts would require. The result is, therefore, that the possessor of these eight or (including the companion gynaecological volume) nine volumes has complete treatises not only on the diseases which come chiefly within the ken of the general practitioner but also of those which usually are left to specialists in various subjects. Speaking for ourselves in India and naturally chiefly interested in the diseases most common in that country, we have no hesitation in stating that the articles on the special diseases of the tropics are from the hands of the highest authorities, and no better volume on tropical diseases could well exist than a collection of all the articles on diseases of warm countries which might be compiled from this system. Last year Professor Clifford Allbutt in the *Lancet* stated his willingness to consider the question of a separate tropical volume, and we hope that as soon as the eighth volume is out, he will feel able to bring out a special tropical volume revised up to date, for even since the earlier volumes of this system have seen the light, important advancements in tropical medicine have been made. We must turn, however, to the present volume, the seventh. In it is continued the subject of nervous diseases (one of the subjects which has been too much neglected in India). Diffuse disease of the spinal cord, limited diseases of the cord (the sclerosis and nuclear diseases) and diseases of the brain are treated of in this volume. Among the many excellent monographs, of which this volume is composed, we can single out for special mention a few only, *viz.*, that on tabes dorsalis, by Drs. Omerod and Mott; on tuberculous and simple meningitis, by Drs. Lees and Barlow; and the complete and philosophic monograph on epilepsy, by Sir Wm. Gower. Another article, that on general paralysis of the insane, by Drs. Savage and Goodall, must also be mentioned. In a chapter on the disorders of sleep, Professor Bradbury handles a subject which he has just delivered lectures upon.

What first will strike the reader in India, who perhaps has not had occasion to keep himself up in diseases of the nervous system, is the wide gap between the knowledge of, say, 15 years

ago and of to-day. It is no exaggeration to say that the marvellous and beautiful work of Ramon y Cajal, Weigert, Marchi, Professor Sherrington and others has literally revolutionised our conceptions of the nervous system, and in consequence the cruder ideas of a decade or so ago have to be abandoned. This will come home to any one who reads the paragraph of the morbid anatomy of locomotor ataxy at page 99 of the volume under review. It is also well seen in the excellent description given of that strange disease syringomyelia. In spite of all that has been written for the past fifty years, the etiology of tabes dorsalis is yet unknown. Statistics, as we all know, have shown "that syphilis is an antecedent so common that we can hardly avoid including it in the causation." But the history of such syphilis is usually remote, and it has often been slight (without constitutional symptoms) and tabes is not usually to any degree amenable to specific treatment. It may be that syphilis acts in some such way as ergot or lathyrus sativus or as the diphtheria virus causes post-diphtheritic paralysis; however this may be, "the statistical facts remain that most, though not all, of the patients who have tabes have also had syphilis." Men suffer much more than women. Why is not known, nor is it easy to reconcile this fact with a purely syphilitic origin. Other determining causes are exposure to cold, over exertion, privation, sexual excess, and injury. The question of sexual excess is always difficult, but especially here, as it is certainly one of the symptoms of the commencing disease. Tabes and general paralysis are allied diseases, both due to a parenchymatous degeneration with secondary overgrowth of neuroglia due to atrophy of the nobler elements. Dr. Omerod treats very clearly and fully of the symptoms of tabes. The combination of three symptoms, lightening pains, loss of knee-jerk and reflex iridoplegia (Argyll-Robertson's symptom) warrant a diagnosis of early tabes. Mind symptoms are usually absent, but symptoms of general paralysis may supervene in the course of tabes.

Over 120 pages are devoted to the regional diagnosis of cerebral disease, and as it is from the pen of Professor D. Ferrier, the reader is assured that the subject is handled with skill and the completest knowledge. Useful summaries are introduced frequently, which keep the reader in touch with this difficult and fascinating subject. We may quote one of them.

"(i) Irritative lesions of the rolandic area are indicated by epileptiform convulsions on the opposite side of the body, which may be limited to the arm, leg or face; a beginning in this way may become general, with or without loss of consciousness. (ii) There need not be any discoverable organic lesion, but if, in addition to the muscular spasms, there is paralysis more or less enduring, and tending to become

permanent, we may diagnose an organic lesion. (iii) The nature of the lesion, apart from external indications, must be determined by the characters peculiar to each, such as tumour, syphilis and the like, and its exact seat by its limitation or mode of onset in the face, arm or leg respectively. (iv) If in the face, the lesion is situated in the lower third of the rolandic area, or in close proximity to it. If in the arm, in the middle third; if in the leg, at the upper third of the rolandic area. . . ."

We have not space to devote to the altogether excellent chapter on general paralysis of the insane by Dr. Goodall and Dr. Savage, nor to Sir William Gowers' account of epilepsy. In conclusion, the volume is a worthy successor to its predecessors in this system, and no better account of diseases of the brain and cord exists in the English language than is given in the volume before us.

Current Literature.

SPECIAL SENSES.

Mechanism of the Accommodation.—The shock given to the currently received theory of Helmholtz regarding accommodation by the publication of Tscherning's researches, repeating and amplifying the experiments Thomas Young made early in the century, has been referred to more than once in these columns. In the August number of the *Practitioner*, Mr. Treacher Collins gives a good summary of the latest investigations. Those of Barrett and Priestley Smith have already been referred to in previous issues. Theodor Beer (*Wiener Klinische Wochenschrift*, Oct. 1898) treats 'accommodation in the animal kingdom,' and Heine (*Graefe's Archiv* Band, XLX, ab. 3, p. 469) publishes "Physiologico-anatomical Investigations on Accommodation in the Eye of the Bird." Dr. Beer's paper is a mine of interesting information, and deals with accommodation throughout the whole of the animal kingdom.

In the faceted eyes of crustaceans and insects, accommodation is known to take place, the relative thickness of the retina in proportion to their smaller size rendering it unnecessary. Among the cephalopods, the fishes, the amphibians and the ophidians, Beer finds that accommodation is brought about by an alteration in the distance between the lens and the retina. In lizards, birds, and mammals, including man, it is due to an increase in the curvature of the lens.

In cephalopods and fishes the eye at rest is adapted for near vision, but they can voluntarily diminish the distance between their round lenses and the retina, and so bring about a sort of negative accommodation (Figs. 1 & 2).

The way in which the distance between the lens and retina is diminished differs in the two classes. In the cephalopods there is a muscle which passes from the equator of the eye to the periphery of the lens, and draws back the anterior part of the eye. In fish, attached to the upper part of the spherical lens, is the suspensory ligament, and below a tendon-like piece of tissue, which from its bell-like shape, has been called the *campanula*. Beer describes it as composed of unstriated muscle fibres; on contraction it draws back the lens. He terms it the *retractor lentis* muscle.

Atropine he finds has no influence on the accommodation of cephalopods, but a very small dose either dropped

into their tank or injected subcutaneously, in fishes, paralyse their power of moving the lens forward or backward.



Fig. 1.—The eyes of a small cephalopod (*Rossia macrosoma*). The change in form, the result of accommodation, is slightly exaggerated.
R, rest; A, accommodation.

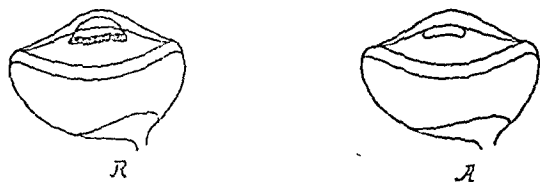


Fig. 2.—Enucleated eye of a small fish (*Lophius budegassa*). With the retraction of the lens the pupil contracts. The lens is not retracted by the iris; the contraction of the iris follows the retraction of the lens.
R, rest; A, accommodation.

In amphibians what power of accommodation they possess is positive and is produced by displacement forward of the lens. The unstriated ciliary muscle on contraction, by increasing the pressure in the vitreous chamber, causes the lens to be pressed forward, the displaced aqueous accumulating in the angle of the anterior chamber, which is deepened by the action of the same muscle; a similar system of accommodation is met within the reptilia. They possess a powerful circular striped muscle at the root of the iris, which, on contraction, raises the pressure in the vitreous chamber and forces the lens forward. If their sclerotic is punctured and the opening kept patent, their power of accommodation is abolished.

In turtles, lizards, and birds, in whom there is a bony ring round the ciliary region, Beer states that accommodation is brought about by relaxation of the tension of the suspensory structures around the lens, permitting it to adopt its attitude of rest. In birds this is effected by a striped ciliary muscle of large size (Crampton's muscle). The curvature of the lens when removed from the eye, Beer finds to be the same as that assumed on electrical stimulation of this muscle.

Heine, however, who fixed one eye of a bird with the accommodation paralysed, and the other in active accommodation, and then examined them microscopically, says that the condition found proved that the muscle of accommodation, which acts as a unit, renders tense the zonula in its contraction.

Beer says that in birds Crampton's muscle acts, not by drawing forward the choroid as the ciliary muscle does in mammals, but by drawing backwards the innermost layers of the cornea.

Dr. Beer says, as regards the range of accommodation in the mammalia, man comes first, then the higher apes; others follow at a very considerable interval. In the cat and other carnivora, it attains the highest degree. Among the lower order of mammals, it is large, also in the seal and others. By electrical stimulation of the freshly enucleated eye of the common cat, it is easy, he says, to demonstrate the increased projection of the anterior surface of the lens. In the hare and rabbit only did he fail to discover any change in refraction, either after administration of myotics or after electrical stimulation.

F. P. MAYNARD, M.B., D.P.H.

PATHOLOGY AND BACTERIOLOGY.

Recherches sur les Propriétés Neutralisantes de la bile à l'égard du virus Rabique.—Par M. h. Vallée (*Annales de l'Institut Pasteur*, June 1899).—Franzius having published some experiments, which he considered proved, that bile from a rabic animal contained an antitoxine against the disease, the author has examined the question. He finds with Franzius, that if bile from a rabic animal is mixed with an equal part of the emulsion of the cord of an animal, which has died of the disease, and the whole injected into the brain of a healthy animal, no symptoms of rabies are produced, and the same holds good if the injection is made into the anterior chamber of the eye. On the other hand, contrary to Franzius, he finds that if bile from a healthy animal is used in the place of that from a rabic one, the same result is obtained. Moreover, if the injection is made immediately the mixture is made, then the disease follows. Again in the experiments where no disease followed no immunity is produced, while, further, if the bile is previously heated to 110 for ten minutes, which would be likely to destroy any antitoxic body, the bile will still neutralise the virus. He, therefore, holds that the action of the bile is purely that of an antiseptic, and that it contains no antitoxine.

L'Inoculation Intra-Cerebrale du Virus Rabique.—By E. Leclainche and C. Morel (*Annales de l'Institut Pasteur*, June 1899).—The effect of serial inoculation of rabies virus into the brains of rabbits and dogs was carried out. It was first found that $\frac{1}{2}$ c. c. of normal brain emulsion could be injected into the brain of the rabbit, and $\frac{1}{2}$ c. c. into that of the dog without doing any harm. In the case of rabies of the dog the disease followed in rabbits, who were injected as above, after from 14 to 17 days, but after twelve serial passages the incubation period was reduced to only seven days, which is much more rapid than when the injection is made into the anterior chamber of the eye, and consequently the authors recommend this method for the experimental testing of the virulence of the cord of any animal, which is suspected of having suffered from rabies.

Les Vaccinations à l'Institut Pasteur en 1898.—By Dr. Henri Pottevin (*Annales*, June 1899).—During the year 1898, 1,465 persons were treated at the Pasteur Institute, four died of rabies, but one of these died ten days after the end of the treatment, that is, before the full effect had been obtained, as fifteen days is required for this. Excluding this case then, the mortality then was 0.27 per cent. which is the lowest ever recorded, although it has never been above 0.5 during the last ten years. The cases are divided as usual into three classes. Class A, in which the animal which bit the patient has been experimentally proved to have been rabic by his cord, when injected into another animal having produced the disease, or by some other person or animal bitten by him having died of the disease. Under this heading there were 141 cases, no less than 111 of whom had been bitten on exposed parts of the body, with no deaths among them. Class B which comprises cases in which the animal had been found to be mad by a veterinary examination. In this class there were 855 cases, 629 of which had been bitten on the head or hands, with only one death. Class C included 469 cases in which the animal was suspected of being mad, with two deaths, one of which was the unfortunate Mr. O'Leary, who died at Mian Mir in November last. One hundred and thirty-two of the patients came from foreign countries, of which no less than 56 hailed from India, while only 25 came from England, Belgium and Switzerland coming next with 21 each. The need for a Pasteur Institute in India is becoming increasingly evident.

Antirabic Vaccinations at St. Petersburg.—(Arch. d. Sciences Biol. Vol. VI, No. 2).—Two hundred and sixty-eight persons went through the

ull treatment, excluding some who were bitten by animals which were doubtfully mad. One hundred and four of these were children. Thirty-three cases came under treatment within three days after being bitten, 127 within the first week, 74 in the second, 10 in the third, 14 in the fourth, and 10 after one month. Two hundred and twenty-six had been bitten by dogs, 28 by cats, 6 by wolves, 4 by men, 2 by a cow, and 1 by a horse. Two cases died while under treatment, and two more after the treatment was finished. Excluding the first two, the mortality is 0.7 per cent.

Report of the rabies station of the Municipal Hospital of Samara for 1896, *ib.*:—Out of 816 cases treated two were attacked by the disease before the process was completed, and two more within less than fifteen days after the inoculations were finished. Only one other case died at a later date, giving a mortality of 0.12 per cent.

The Sterilisation of Milk.—By A. Macfadyen and T. R. T. Hewlett. (Transactions of the British Institute of Preventative Medicine, First Series).—This research was undertaken with a view to the discovery of a simple and rapid method of depriving milk of all pathogenic organisms and those which cause a rapid decomposition, without altering its taste. The critical temperature for sult is said by Duclaux to be 70 c. process consists in heating the milk to, from, 65 to 70 c. for a short time and then rapidly cooling it, so as to prevent the increase of those bacteria which are still alive, for it would be necessary to heat it in an autoclave for six hours to render it absolutely sterile. The ordinary method of Pasteurising milk in large quantities, namely, to pass it over a heated metal surface, is said by the author not to kill all pathogenic germs with certainty. Bitter succeeded better by heating the milk by means of a spiral tube running through the vessel in which it was put, and through which steam was passed. The authors first tried fractional sterilisation for three successive days at temperatures of from 55 c. to 65 c., but the results were not favourable, as the number of organisms found increased each day after the first sterilisation. They then constructed an apparatus for heating milk for a short time to 70° c. by means of passing it through a coiled tube placed in boiling water, then through another tube in cold water, and finally repeating this process again. In this way they succeeded in reducing the number of organisms originally present to from 1 to 2 per cent during a passage through the apparatus of one minute, and without altering the taste of the milk. The milk, moreover, kept for at least a week if placed in a cool place. They further tested the capability of their apparatus to destroy diphtheria, typhoid, tubercle bacilli, and the staphylococcus pyogenes aureus. They found that an exposure for 30 seconds to a temperature of 70 c. was sufficient to completely kill these organisms. They claim for their apparatus that it is simple of construction, easily worked, rapid in its action and capable of dealing with unlimited quantities of milk. If these claims are substantiated, the apparatus ought to be of great use in India, although ice would probably be necessary in working it during the hot weather.

The Sterilisation of Water by Filtration.—By J. Lunt. (Transactions of the British Institute of Preventative Medicine).—This investigation was undertaken in order to test the capabilities of the Berkefeld filter, to test the statements of Schoefer and others to the effect that this filter will intercept pathogenic bacteria even when water bacteria are able to pass through it. The result of a large number of experiments was to confirm these statements, for although the filtrate obtained was not absolutely sterile after the first day, yet both the bacillus coli communis and the typhoid bacillus could not be detected in the filtrate over periods of 39 and 26 days respectively, although they were easily found in the

water outside the filter for 39 and 6 days respectively. The cholera bacillus also, when added to London tap water, was never once detected in the filtrate. It was also found that the travellers "N" filter, in which combined suction and force pump cause violent changes of pressure, gave very bad results with good candles, but the "R" filter in which atmospheric pressure forces the water into an exhausted receiver gave good results. They advise that a semi-weekly or weekly cleaning of the filtering candle as being all that is necessary to provide against water-borne disease.

L. ROGERS, M.D., F.R.C.S.

ANNUAL REPORTS.

THE HEALTH OF INDIAN JAILS IN 1898.

A YEAR ago attention was called to the notes made on dysentery in the Reports of the various Inspector-Generals of Jails in India. This year there is less to chronicle, at least less has been written about the disease. In Burma we find an increase in the admission rate for dysentery, *viz.*, 63 per mille or for the Province 842 cases with 53 deaths. No comment is made on these figures. In the Punjab there was a repetition of what is so well recognised, an unhealthy autumn followed by a high mortality in the cold weather months. Lieutenant-Colonel Bate states that he holds the opinion strongly that sickness and mortality among prisoners are to a great extent preventable, but satisfactory results are only to be obtained by the unremitting attention of all concerned. Major G. F. W. Braide, of the Lahore Central Jail, says the health was at its worst during April and May 1898, and very special measures were taken to fight against the prevailing diseases, ague, dysentery and diarrhoea. As in former years, he believes the bad health to be due to malarial saturation. In April and May there arose "a condition not actually scurvy but closely allied thereto, a scorbutic taint which is recognised to be, if not a cause, at least a concomitant of dysentery." Colonel Bate at his visit in May found in many convicts unmistakable signs of malarial cachexia. To combat this he ordered (1) issue of fever prophylactics; (2) more fresh milk, meat, *dahl* and sago to the sick and convalescent; (3) *ghi* was substituted for oil in the dietary of convalescents; (4) sound fresh potatoes and onions to every man; (5) clean bedding; (6) lime-pickle instead of dry antiscorbutics; (7) *dallia* porridge (coarse wheaten flour) instead of the parched gram; (8) the water was treated with permanganate of potash; (9) all dysentery cases were segregated, and their evacuations were ordered to be disinfected [was this not done before?]; (10) reduction of the number of men in each barrack at night; (11) reduction in the hard labour tasks. He has since noted a slow but sure improvement in the health. Major Braide writes that though he will not dogmatically say that the whole question of jail dysentery lies in a nutshell—vegetable supply—yet he thinks this an important factor in the case and intends to try to prevent dysentery by a free supply of antiscorbutics. In the whole Province there were 1,073 admissions and 49 deaths from dysentery (a low case—death-rate). Lieutenant-Colonel Bate writes that the main objects to be kept in view in combating jail dysentery are (1) to protect against malarial fever, and (2) to supply plenty of antiscorbutic vegetables. "Defects in hygienic arrangements that are harmless under normal conditions make themselves felt as soon as the natural power to resist disease becomes impaired." With this remark we entirely agree. In ASSAM there are only about 1,500 prisoners in all jails. Cholera in Assam jails was notably absent (only 1 case). The general health and the death-rate was improved. Dysentery, anaemia and (quaint diagnosis) "debility" were the chief diseases. Dysentery caused 477 admissions with 21 deaths. The progressive decline in the general death-rate is satisfactory—*viz.*, 52, in 1896, 43 in 1897, and 35 per mille in 1898. Colonel Carr-Calthrop believes that this is to some extent due to the prophylactic issue of quinine. Five per cent. of those admitted confessed to being habitual opium eaters. It is 16 per cent. in Burma. Unfortunately no details are given of the improved scale of diet issued in 1898. Colonel Carr-Calthrop strongly advocates the use of lime-pickle which he introduced into the Central Provinces. In the N.-W. Provinces Major Mactaggart reported that many Superintendents were opposed to the use of barley in the jail diets, and he agrees with this view. He strongly believes that where there is much bowel-complaints, barley should never be used, as it is impossible to satisfactorily remove the husks from the *atta*. Regarding adulteration of *atta* with mud it is noted that great care is now taken to prevent this, and that *atta* used in jails is less impure than that usually obtainable in the bazar; with the latter remark we are on entire agreement, having made several tests of bazar *atta*. Major Mactaggart does not think that the ration of oil (*chitak*) though less than in other provinces is deficient. It is

as much, he says, as the free labourer can afford in his diet. The cooking has been improved, we are glad to see, for we regard this as a vital matter in the prevention of dysentery. The total death-rate was 28·7 *per mille* of average strength. Cerebro-spinal fever was noted in Mirzapur. The Central Prison at Benares continues unhealthy. With a death-rate of 34 *per mille* and no less than 84 on the average sick in hospital and the enormous figure of 139 in the convalescent gangs, we agree that it is certainly not satisfactory.

The great part of the mortality was due to dysentery, and in the Medical Officer's opinion due to the water. The water, though boiled in a Larmore boiler, is cooled in open buckets and liable to infection in consequence. Why the filtered water from the water-works, only half a mile off, is not used passes our comprehension. The cooling of the filtered and boiled water in jails has not yet been satisfactorily settled; from an experience of several large jails in Bengal we are of opinion that the present cooling arrangements are very unsatisfactory—they are usually too small, and in one jail, we know, in consequence, prisoners are compelled either to drink hot water or to use inferior water provided for bathing. The latter being cool is naturally preferred. It is a melancholy fact that the dysentery in Benares Jail has largely increased since the introduction of the boiler, but this is not the fault of the boiler as long as water is allowed to 'cool' in *microbe-breeding earthen gharis*. The same remarks apply to the boiled water system at Fatehgarh. There were in all 1,774 admissions and 190 deaths from dysentery in N.-W. P. Jails. All Superintendents agree in regarding malarial poisoning by far the most important predisposing cause of dysentery, *i.e.*, the debilitating effects of fever. That it is infectious, says Major Mactaggart, can scarcely be doubted. He very wisely suggests the use of hospital cells for isolation of dysentery cases. We hear that incinerators are "being supplied." This is certainly necessary. Major Mactaggart then quotes with appreciation our editorial on Dysentery in English Asylums (*L. M. G.*, February 1899). Pneumonia next to dysentery gives most anxiety. Major Mactaggart, correctly, we think, considers that much of the pneumonia and bronchitis is due to influenza. We agree with him in recommending the closure of the lower half of windows in the cold weather. There were 211 admissions for tubercle and 101 deaths. Sedentary work and irritation from particles of wool and cotton are given as probable causes.

In the CENTRAL PROVINCES the diet scales were improved; gram was done away with, and wheat and *jowari* alone allowed. This change in Jubbulpur Jail alone is said to have cost no less than 10,000 rupees. The salt and condiments were also increased, and potatoes and onions freely issued. The plan so successful in Bengal of buying and storing food-stuffs at the cheapest season does not appear to be everywhere carried out in this Province. But we do not agree with the suggestion that a special commissariat officer is needed for the purpose. A possible difficulty, not here noticed, is that the *godown* accommodation might not be equal to the demands of a year's supply. We are glad to note a fall from 138 *per mille* death-rate to the more respectable figures of 38. The famine was responsible for the terrible mortality of 1897. Privation, says Lieutenant-Colonel McKay, was the cause of the dysentery. There was no cholera in the Central Province Jails in 1897.

In Madras an improvement in jail health is recorded, the death-rate being only 26—a distinct improvement on the previous year when it was 47. (The average for past ten years is 29.) Compared with other famine years the improvement in health is eminently satisfactory; it was 173 *per mille* in 1887. Rajahmundry is raised to the "bad eminence" of the enormous death-rate of 193 *per mille*. The mortality in this jail has been discussed in these columns, and has been shown by Captain Fearnside to be due to malaria, not to *beriberi* as was formerly supposed. In Madras the question of the infectiousness of dysentery is also raised. In Bengal Lieutenant-Colonel E. Mair has the satisfaction of showing in his first annual report a "best on record" death-rate, *viz.*, 22·5 *per mille*. Here, again, we record an almost entire absence of cholera (this is a feature in all the returns for Indian jails in 1898). We have in last issue referred to the question of the prophylactic issue of quinine. Dysentery caused no less than 3,444 admissions with 90 deaths or a death-rate of only 1·6, which point to one of the most successful means of fighting jail dysentery, *viz.*, *free and early admission of all cases, even the mildest*. This should be firmly impressed upon the medical subordinates who will otherwise refuse to admit mild cases, or relegate them to their *favourite* convalescent gangs—where too often they neglect them. All the Bengal Central Jails show very low death-rates (most of them under 12 *per mille*), and very few deaths from dysentery. Bhagalpur (with 5 deaths from cerebro-spinal fever) has a death-rate of only 11; Dacca, a rate of 11 also; and the infirmary jail at Hazaribagh still better, only ·2. Since 1894 Bengal jails have been in good luck.

N.-W. P. DISPENSARIES IN 1898.

The Government Resolution on Colonel G. Hall's Triennial Report on the Dispensaries and Charitable Institutions in the North-West Provinces and Oudh is published. The year was an exceptional one owing to famine and plague, and led to

a falling off in the attendance, both of indoor and outdoor patients, that is to say for the whole period, for the year 1898 showed a considerable increase. In 1896 many persons who would otherwise have gone to the usual hospitals flocked to the famine poor houses and relief works. Colonel Warburton had noted in 1897 the falling off due to plague scares and to the disorganization of the medical staff owing to removal of officers for the frontier campaigns and plague. The increase in 1898 points to a return of confidence and to a cessation of the plague scare. The number of children admitted as indoor patients has increased, a matter for satisfaction as showing confidence in the institutions. For some reason Hindus do not resort in proportionate numbers to the N.-W. P. Dispensaries, while the Muhammadans freely attend. We must defer our remarks upon the operations done till we are able to notice the report itself, especially as the Government Resolution considers the surgical history of the three years to be disappointing. There was an increase in number of cases treated of rheumatism, goitre, poisoning, malarial fevers, and ear and lung diseases, while there was a decrease under head "spleen diseases" and dysentery. We note that the Alighur Jail makes up quinine in pice packets, but will, in future, obtain its quinine from the Madras factory. The education of women in medicine has received a further impetus from the inauguration of the MacDonnell Fund for training women doctors. This fund is due to the liberality of Rajah Tasaduk Rasul Khan; C.S.I., and other Oudh taluqdars who combined to signalise the successful administration by Sir A. MacDonnell of the famine relief. Twenty temporary hospitals were opened in 1898 at the sites of fairs and bathing festivals. We propose to give further details in a later issue.

REPORT ON PUNJAB DISPENSARIES.

This triennial report is furnished by Colonel A. Deane, I.M.S. The most important occurrence connected with the health of the Province was the prevalence of bubonic plague in a number of villages in Jullundur and Hoshiarpur Districts. This matter is, however, not dealt with in the report before us.

There were five dispensaries opened during the year, and three closed. In all there are 267 public dispensaries in the Punjab, for a population of over 20 millions, or a population of on the average 79,000 people for each dispensary to draw for patients upon. In all over three million patients were treated during the year. This was a slight falling off which is explained by Colonel Deane as due to frequent changes of Civil Surgeons and transfers of Medical Subordinates to fight the plague in the affected districts; in addition to this the year was, on the whole, a healthy one. It appears that in the Punjab there are more beds available in the hospitals than patients to occupy them. This does not appear to be because Punjabis are less willing to go as inpatients to hospital, but that for some reason the beds have been provided above reasonable requirements. It may be hoped that increasing popularity will fill the beds. There was also a considerable falling off in outpatients; this occurred more or less all over the Province, and is probably correctly attributed to the greater healthiness of the year. It is, however, satisfactory to see that there was an increase of attendance at the Frontier hospitals, who draw their clientele from the trans-border tribes. Statement iii shows the principal diseases treated. The first point to be noticed in the falling off in the number of cholera cases treated. There were 870 in 1896, 93 in 1897, but only three in 1898. This is, as Colonel Deane remarks, unprecedented. Colonel Deane was much struck at the large number of cases of spleen and dropsy attending the hospitals. It is worth while contrasting the attendance of persons suffering from various diseases in the Punjab with those in Bengal, for example, while in the Punjab 5 out of every thousand (5 *per mille*) attending the hospitals are treated for scurvy, only 0·6 *per thousand* are treated for this disease in Bengal. It is difficult to say if this means that scurvy is nine times more common in the Punjab than in Bengal. Again take "worms." In the Punjab worm complaints form 2 *per mille* of those coming to hospital, while in Bengal they form no less than 54 *per mille*, that is, apparently, as far as hospital attendance goes, worms are 27 times as common in Bengal. Take again "diseases of the lungs," including tuberculous affections, but excluding "other diseases of the respiratory organs," we find that in Bengal 12 of every 1,000 patients are treated for lung disease, and in the Punjab only 5, that is, in the dry hot Punjab lung diseases (presumably phthisis) are less than half as common as in damp Bengal. Take also goitre: 10 *per mille* of hospital patients come to be treated for this disease in the Punjab and 20 *per mille* in Bengal. It may be interesting also to note in what districts certain diseases are most prevalent. As regards scurvy, we find in Bengal it is most common in the returns of small outlying dispensaries, in Noakhali, Khulna, Pubna, Comilla and Mymensingh Districts; all these are more or less malarious, and it may be noted that in the head-quarters dispensaries, where Civil Surgeons are most *en evidence*, the disease is scarcely, if ever, recorded at all. This points to the personal equation in diagnosis, we think, rather than to any particular prevalence in the rural areas. Let us next see how the disease is met with in the Punjab. We find it much more common and much more evenly distributed,

and the difference between head-quarter stations and rural dispensaries is not so marked in Bengal. How far this question is due to different views taken of the state of the gums it is difficult to say. In our last issue the question was discussed with regard to the prevalence or otherwise of scurvy in Indian jails. Now take worms: we find complaints from intestinal worms comparatively rare in the Punjab, and distributed fairly equally over all districts; in Bengal we find an enormous attendance for worm complaints; Durbunga District easily heads the list, and is followed by Chapra, Patna, Comilla, Noakhali and Darjeeling with large attendances. On the other hand certain districts (which may also be in geographical juxtaposition to those in the other list) show very small attendances for these complaints, e.g., Khulna, Burdwan, Suri, Hooghly, Dinajpur, Jessore, Jalpaiguri, Rangpur, Pubna, Bhagalpur, Hazaribagh and Ranchi. This only shows how very ignorant we are of the geographical distribution of disease in India. Take now goitre: here, in Bengal, we met with some facts which may surprise those who do not know the districts; we find Mozufferpur in Tirhut to head the list over 15,000 attendances for goitre, next comes Chapra, then Durbunga, then Champarun, after this Mymensingh, Darjeeling, Rangpur. On the other hand, the attendance for goitre is practically nil in Arrah District, in Gaya, Dumka, Cuttack, Puri, Hazaribagh and Ranchi, and very few goitre cases ever attend the hospitals in the hilly district of Chittagong. Tirhut and neighbouring districts in the N.-W. P. have long been notorious for goitre. Let us next see the distribution in the Punjab. We find a large number of attendances in the Kangra Valley, Simla District, Jhang, Gurdaspur, Sialkot, and Hazara, and somewhat less in Rawal Pindi.

In Umballa and Multan a considerable amount of goitre exists, also in Montgomery and Gujrat. Other districts like Hisar, Gurgaon, Delhi, Ludhiana and the Frontier Districts of Dera Ghazi and Dera Ismail Khan have very rarely a case.

The Punjab hospitals have ever been famous for the number of operations done in them.

shows a slight increase in bowel-complaints. Sialkot, with a new drainage scheme in 1888, has worse results under cholera, small-pox and fevers, with an improvement under diarrhoea and dysentery. Rawal Pindi, with its water-supply in 1887, shows worse results under cholera, small-pox and fevers. Murree is worse from fevers and bowel-complaints. Jullunder is worse from small-pox and fevers. Abbottabad worse from small-pox and fevers. Peshawar worse from fevers, in spite of both water-supply and improved drainage.

Undoubtedly, some of this may fairly be attributed to better registration of deaths, and in part to the use of a census now nearly ten years old. The Sanitary Commissioner, India, very rightly suggested in 1896 that sufficient care is not bestowed upon water-works. "Water-works require expert management; to entrust their control to a man who knows nothing of hydraulics and less about the delicate working of a filter bed is to court disaster." Only those who have had to do with Municipal Committees in charge of water-works will realise the truth of the remark just quoted.

HEALTH IN ASSAM IN 1898.

In spite of the improved health of the public in 1898, there was a satisfactory increase in the number of patients attending the dispensaries. Dibrugarh Hospital is well to the front. The death-rate among patients treated in hospitals in Assam is still very high, no less than 16 per cent. In Bengal the average is about 12 per cent., in N.-W. Provinces, 6 per cent., and in Punjab, only 4 per cent. A large number of these cases occur in Assam among destitute and starving coolies who come to the hospital as to a workhouse. Colonel Carr-Calthrop makes a timely protest against treating all chronic diarrhoea and dysentery cases in a ward labelled "moribund." Such "hovels," says Colonel Carr-Calthrop, might well have Dante's terrible words inscribed on them "abandon hope all ye who enter here." He proposes the term "isolation ward," a far more satisfactory way of putting it.

Year.	BY CUTTING.						BY CRUSHING.			Deaths from stone operations.	Percentage of deaths, including cases remaining from previous year.
	Suprapubic.	Lateral perineal.	Median perineal.	Vaginal.	On females by dilatation.	Total.	Lithotripsy.	Litholapaxy.	Total.		
1896	11	327	9	8	15	370	3	1,665	1,668	{ Deaths from lithotomy ... 39 " " crushing ... 67	10.2 4
1897	9	249	12	11	8	289	1	1,521	1,522	{ " " lithotomy ... 36 " " crushing ... 51	12 8.3
1898	6	265	16	7	12	306	2	1,692	1,694	{ " " lithotomy ... 36 " " crushing ... 59	11.4 3.4

In 1898 there were in all 4,534 operations for cataract with 87.4 percentage of cures. The above table shows the operations for stone during the past three years.

In a large number of hospitals the cutting operation is discarded, but as Colonel Deane points out the expense of litholapaxy instruments is great, and all hospitals are unable to afford complete sets. The natives attending fully appreciate the crushing and are becoming unwilling to undergo the cutting operation. Among the list of operators the following stand at the head of the list: Major Perry, Major Mulronay, Major A. Coleman, Major J. Cunningham and Major W. R. Clark. There were six ovariectomies done during 1898, five of them with only one death by Dr. Elizabeth Bielby at the Lady Aitchison Hospital, Lahore. In Jullunder Hospital there were no less than 960 operations done in the year. There are six Leper Asylums in the Punjab, the largest being at Amritsar with a strength of 269 patients. In the report of the Mayo Hospital it is noted that liver abscess is very seldom met with in native patients suffering from chronic dysentery.

HEALTH OF THE PUNJAB IN 1898.

One of the most remarkable and least satisfactory features in Major Bamber's Sanitary Report on the Punjab is given at page 43, in a table which contrasts the average annual death-rate for a period before and after the introduction of important drainage or water-supply schemes, e.g., we may quote a few instances from the chief towns of the Punjab. Delhi only shows an increase in small-pox, Umballa the same, Ludhiana shows an increase in diarrhoea and dysentery in spite of the drainage scheme of 1893. In spite of its water-supply in 1894, Amritsar

He also says that it is better to use the good wards for such bad cases than to keep them half empty "clean spick and span for show" and to huddle serious cases into a miserable hovel. It is these miserable cases that the hospital is meant to alleviate. Table No. 6 shows the enormous number of malarial cases treated in Assam. No less than 171,898, not including 5,572 cases of kala-azar, are shown in this year's report. Kala-azar was chiefly confined to Nowgong District, 4,806 cases, with a few hundred in Darrang and Kamrup.

Very little surgical work is done in Assam; so much of the Civil Surgeon's time is taken up with inspections of distant dispensaries and tea gardens, that he has no time for the regular work at hospital which is necessary to attract patients. These officers are, owing to these inspections, not so much Civil Surgeons as Deputy Sanitary Commissioners. An improvement, however, is noted in the number of operations. The Statement IIIA, however, shows formidable figures for teeth extraction, abscess opening, for boils, whitlows and a few tumours. There were only 18 cases of cataract extraction in the whole province, and 6 lithotomies. The site for "The Berry White Medical School" has been chosen, but to make it a success the Dibrugarh Hospital will need to be much enlarged and improved. Colonel Carr-Calthrop, at Dibrugarh, was shown 13 cases of what is there called "anemia of coolies." He had now no doubt, they were cases of kala-azar. (This too as far north as Dibrugarh!) The hospital in Manipur is in good condition and even provided with a "very expensive litholapaxy set which was hardly necessary." A Leper Asylum (under Bengal Act V of 1895) was opened at Sylhet in 1898. It has accommodation for 18 single lepers and 14 families. It is maintained by the Municipalities and Local Boards of Cachar and Sylhet Districts.

VACCINATION IN THE PUNJAB.

THE triennial report is submitted by Lieutenant-Colonel C. J. Bamber, I.M.S. The Deputy Sanitary Commissioner was Captain C. H. James, I.M.S., and afterwards Captain E. Wilkinson, I.M.S. The average cost of each successful operation was one anna nine pies. The success of primary vaccinations was 94.15 per cent., and of revaccinations at 59 per cent. The triennial period under report showed an increase in number and success of primary vaccinations, and a large falling off in revaccinations, the latter being due to a necessary order enforcing a seven years' limit before revaccination may be performed. At one time revaccinations were performed indiscriminately for the purpose of unduly inflating each vaccinator's returns, a system which gave an entirely false impression as to the extent the population was protected against small-pox. There appears to be some difference of opinion as to the merits of a new scheme for working the vaccinators introduced by Lieutenant-Colonel W. A. Crawford Roe before he went on furlough. It is not very easy to clearly understand the difference between this scheme and the old one, and it is by no means certain from the Civil Surgeons' reports quoted that it was always understood. The central idea seems to be to increase the power of supervision by directing that all vaccinators should work at the same time in villages or groups of villages not remote from each other in one part of the district, so that the inspecting officer could easily supervise all. Major J. C. Cunningham, I.M.S., reports favourably on the working of this method in Delhi district. We presume, however, that in the event of small-pox breaking out in a different part of the district, either the whole staff or a portion of it would be sent there. One thing is certain that anything which facilitates supervision, and we might add, which enables a Civil Surgeon to check the extraordinary travelling-allowance bills sent in by inspecting vaccinators, is a step in the right direction. Vaseline lymph is in use in the Punjab as well as fresh buffalo lymph. Captain E. Wilkinson in a very interesting report discusses the relative value of three kinds of lymph: (1) buffalo-calf; (2) vaseline; (3) human. The definition of successful is "not less than three marks." There were only 360 vaccinations with human lymph, so that, though it gives the highest percentages of insertion success, it may be left out of account. There were 24,477 primary vaccinations with buffalo lymph and 30,321 with vaseline paste, with an insertion percentage success of 97.5 and 96.1 respectively. This is certainly very satisfactory and speaks well for the vaseline method. Capt. E. Wilkinson makes an important observation, when he notes that the scars produced by the vaseline paste more frequently showed the "well-known pitted appearance." From a considerable experience of vaccination of prisoners, we have come to regard this "pitted" appearance as the only genuine scar of previously successful vaccination. In adult vaccination medical subordinates too often plough up a man's arm and a sore results and a permanent scar, but that it is a pure vaccine scar is open to some doubt, and very frequently men with even enormous (non-pitted) scars can be successfully vaccinated again within a few months (or even days) of a supposed successful vaccination. The vaseline paste was more popular with the people, but is opposed by the vaccinators, who find that they have now no excuse to idle in a village, fed at the expense of the villages and pretend to wait till the lymph is ready.

We are glad to see a scheme proposed for the establishment of vaccine depôts in Murree and at Lahore, instead of as now at Amritsar. Any one who has read Dr. Copeman's book on the natural history of vaccination will understand the necessity for very careful supervision of animal vaccine depôts.

VACCINATION IN ASSAM.

THE report for 1898 is submitted by Colonel Carr-Calthrop, M.D., I.M.S. Three vaccinators were appointed to the Lushai Hills for the first time. While the total number of operations very largely increased, this was chiefly in revaccinations, for the number of primary vaccinations showed a large falling off. The primary vaccinations are supposed to have been successful in no less than 98.8 per cent., and revaccinations at the extraordinary figure of 93.8. We agree with Colonel Carr-Calthrop that such "success" is altogether unreliable.

It is known that Lieutenant-Colonel Neil Campbell, the Civil Surgeon of Shillong, has done over 800 vaccinations with his own hands without a single failure: this we can believe, because we know that Colonel Campbell has paid great attention to vaccinations for many years past, but it is absurd to expect or to report such expert success at the hands of men like the average vaccinator. The percentage of revaccinations (93.8) is utterly absurd, and is probably nearly 40 per cent. above the true figure. The cost of each successful operation works out at one anna seven and a half pie;—not a high price to pay to protect an infant against small-pox for the best part of his life. Colonel Carr-Calthrop is rightly equally sceptical of the 100 per cent. success of the cases done on tea gardens, the more especially as many of the cases were done on adults who had been previously vaccinated in youth. Such absurd results only show how utterly unreliable the Assam vaccinators and native inspecting staff must be, and we are glad to read the strong strictures passed on their worth by Colonel Carr-Calthrop.

It is curious to read in the various reports of the various effects which an outbreak of small-pox has on vaccination. In one instance it is used to explain a marked increase in vaccination, in another it furnished an explanation of a sort for a falling off. It is, however, possible that it may effect different communities in these different ways. Colonel Carr-Calthrop cannot accept Major Fink's explanations as to the serious falling off in vaccination in the Sibsangar district. Major Fink's staff must be a very bad lot as is evidenced by the Rs. 103 in fines which has been mulcted from their pay. The vaccination in Nowgong district is also recorded as unsatisfactory and the explanations are not less so. Assistant-Surgeon Bancroft has done very good vaccination work in the Garo Hills district, and his good work is noticed by the Chief Commissioner. When we read that a Civil Surgeon reports one hundred per cent. of successful operations at inspections, we can only explain it by saying that all the failures were carefully hidden from him—a favourite trick of vaccinators all over India.

An interesting report on the animal vaccine depôt at Shillong is submitted by Lieutenant-Colonel Neil Campbell. While in Bengal the Sanitary Commissioner pins his faith on lanolin, and in the Punjab on vaseline, in Assam all the lymph is stored in glycerine capillary tubes. The vaccine matter scraped from the abdomens of the vaccinifer calves is pounded up with a mixture of glycerine and water (solid matter, 2 parts; glycerine, 1 part; water, 1 part). This forms a slightly viscous solution, or rather emulsion, which is just sufficiently limpid to flow into the capillary tubes, which are then hermetically sealed by fusion of the ends in the flame of a spirit lamp. As Colonel Carr-Calthrop writes, the advantages of this method are many and obvious; there is no possibility of foreign matter getting mixed with the lymph (after storage); it cannot be contaminated by part being used on the child's arm and part put back into the mass; each child receives the contents of one tube. The lymph in the capillary tubes keeps for three or four months, which is long enough. On the average 916 tubes were obtained from each calf, and as one tube goes to each child, then one calf can supply enough lymph to vaccinate 916 children—a very satisfactory figure; although it is said in Dr. Copeman's book that one calf can supply enough of his diluted glycerinated lymph for about 2,000 children.

JEYPORE MEDICAL INSTITUTIONS.

THIS report is submitted by Major P. Durell Pauk, who succeeded in April 1898 Colonel T. H. Hendley, C.I.E., on the latter's promotion.

There were no epidemics in the State during the year 1898. It is noted that sanitary advances in the city continue to be made. There are twenty-six hospitals and dispensaries in the State; 181,165 patients attended them. No less than over 212,000 visitors visited the Jeypore museum, which owes so much to Colonel Hendley, I.M.S. Fifty-two wells in the city were disinfected with permanganate. A large amount of surgery is done in the Jeypore State hospitals. Colonel Hendley tied the axillary artery in a case where a man was wounded by a penknife in the shoulder. Eye operations were plentiful. Six hundred and three operations were done on the eye-ball, of which 22 were iridectomies for glaucoma, in 17 of which cases the patients benefited by the operation. Of the cataract extractions, 158 were done by Colonel Hendley and 331 by Major Pauk; in 130 cases the lens were removed entire in its capsule. The antiseptic used was chinolol (1 in 2,000) which proved very satisfactory. Sixty-two consecutive litholapaxies have been done in the Mayo Hospital without a death. The heaviest calculus weighed 2 oz. 156 grains. It consisted of oxalates and phosphates, in a child, aged 4 years; it took 36 minutes to crush and 20 to wash out; a No. 12 lithotrite was used with a 16 canula. The patient was discharged cured on the 6th day. Only two stone cases were operated on by cutting. Colonel Hendley, assisted by Major Woolbert, did a successful ovariectomy; the tumour contained 65lbs. of fluid. The report concludes with a brief tribute to the work done by Colonel T. H. Hendley, who was Residency Surgeon at Jeypore for no less than twenty-four years.

Medical Societies.

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY.

REPORT BY MAJOR R. W. S. LYONS, I.M.S., OF HIS DEPUTATION TO THE PASTEUR INSTITUTE AT LILLE.*

THE following is a short account of the methods employed by Dr. Calmette, Director of the Pasteur Institute, Lille, in—
Collecting the venom of snakes;
The preparation of dried venom;

* Abstract from the Bombay Medical and Physical Society's Transactions, Vol. III, No. 2.

Determining the dosage of solutions of venom after the albumin has been removed by heat and filtration;
Measuring the toxic power of solutions of venom;
Vaccinating the horse against venom and preparing antivenomous serum.

Also a brief description of twelve series of experiments, carried out at Lille under the direction of Dr. Calmette, to determine—

The measure of the activity of antivenomous serum;

The duration of the immunity which the serum confers, and the manner in which this is affected by dose;

The antitoxic power of the serum when injected into the veins in rabbits (a) previous to the intravenous injection of a dose of venom lethal in about twenty minutes, or (b) mixed with, or (c) after such a dose of venom;

The antitoxic power of the serum when injected subcutaneously in guinea-pigs, rabbits, and dogs after the subcutaneous injection of doses of venom fatal in from two to four hours to guinea-pigs and rabbits, and in six to seven hours to dogs;

The antitoxic power of the serum when injected into the brain of the rabbit (a) mixed with a lethal dose of venom, or (b) previous to the subcutaneous injection of a lethal dose of venom;

The effect of a temperature of 60° C., maintained for one hour, on the antitoxic power of the serum.

At the Pasteur Institute, Lille, the snakes are kept in cages, in two rooms roofed with glass and maintained at a temperature of about 23° C.

For the purpose of demonstrating the method of obtaining venom, Dr. Calmette made use of eight snakes including—

The *Crotalus durissus* of North America;

The *Bothrops lanceolatus* of Martinique;

The *Naja* of Egypt (Asp of Cleopatra);

The *Cerastes* of Egypt (Horned viper); and

The *Pseudechis porphyriacus* of Australia (Black snake).

The *Hoplocephalus curtus* of Australia (Tiger snake).

The snakes were caught and their venom obtained as follows:—

The lid of the cage having been raised, a snake was caught behind the head and lifted out by means of a pair of forceps about eighteen inches long. The forceps terminate in fenestrated heart-shaped jaws and resemble those used for catching and holding piles, only that they are longer and stronger. When the snake had been lifted clear of the cage and the lid closed, the operator grasped it in his hand just behind the head and removed the forceps. The jaws were forced open by means of the thumb and index finger of the hand in which it was held, the open mouth being turned away from the operator's face lest some of the venom should be injected into the eyes, as venom sets up a severe form of ophthalmia. An assistant then placed a watch-glass about four inches in diameter, in the open mouth, with its edge resting against the palate, immediately behind the fangs. The fangs were then lifted over the edge of the watch-glass and unsheathed, and the operator by means of a milking movement with his free hand forced the venom from the glands into the glass. The poison glands in the snake are situated posterior to the ascending ramus of the lower jaw. When all the venom has been obtained the snake was fed by means of a glass funnel passed down its throat. An egg was broken into the funnel and poked down with a glass rod.

The amount of venom obtained in this way varies a good deal, the larger snakes as a rule furnishing more than the small ones. Probably 2 c.c. in the case of the smaller and 3 c.c. in the case of the larger snakes would be about the average. It is taken from the snakes about every ten days or fortnight.

In appearance the venom from some of the snakes was opalescent and of about the same consistence as white of an egg, or rather thinner; in others the colour varied from a bright yellow to a deep orange or reddish orange hue. The venom of the different snakes was received in the same watch-glass, and when all the venom was collected in this way and mixed, it was removed to a dark room and dried at the room temperature, about 20° C., in a dry atmosphere. The toxic action of venom is impaired by exposure to light or to a high temperature, consequently it is dried as described above.

Venom, when dried, forms reddish-yellow or brownish-yellow crystalline-looking scales, which occasionally become agglutinated into little irregular shaped masses. In bulk, it has a heavy offensive odour; it can be kept in stoppered bottles indefinitely without deteriorating, if dry, but decomposes if it becomes moist.

If a drop of venom be placed in the conjunctival sac of a rabbit, it sets up violent inflammation of the conjunctiva, or in the case of subcutaneous injection, causes oedema and inflammation accompanied by hæmorrhage at the point of inoculation, as the result of its local action.

Horses are immunised at Lille in order to obtain antivenomous serum, by means of subcutaneous injections of solution of venom in increasing doses and extending over a period of several months. The injections are made into the subcutaneous tissue of the neck just in front of the near shoulder, and invariably cause abscesses. The apparatus employed consists of a glass jar, containing the solution of venom, fitted with an india-rubber cork perforated by two holes. Through one of these holes a short

piece of glass tubing is passed and to the outer end of this an india-rubber tube is attached, fitted with two india-rubber balls for forcing in air. Through the second hole a long piece of glass tubing is passed down to the bottom of the jar, and its outer end is connected by india-rubber tubing with the canula thrust under the skin of the neck. Young horses are chosen for immunisation, and are first tested for glanders by injecting them hypodermically with mallein.

To immunise a horse Dr. Calmette begins by injecting five milligr. of dried venom ($\frac{1}{2}$ c.c. solution 1 in 100). After one week one milligr. is given. Then one milligr. every 2 days for two weeks; then four milligr. every three days for two weeks. After this the horse may be given eight milligrs. once every week, and, if the re-action it produces is not very great, the dose may be increased at each injection by two milligrs., until the animal can support one gram of dried venom in 100 c.c. water. It is useless to employ a serum therapeutically which does not prevent death when given intravenously in a dose of $\frac{1}{2}$ c.c. To obtain so active a serum, a horse requires to have undergone immunisation for about sixteen months. Sometimes it will be found, however, that when he can receive 5 grams of dried venom without being made ill, his serum is sufficiently antitoxic for use.

The Action of Venom and Antivenomous Serum in Animals.

In order to determine the action of venom and of antivenomous serum when injected intravenously, subcutaneously, or into the brain substance, a series of experiments were made on rabbits, guinea-pigs, and dogs. Of these No. XI was performed by Dr. Calmette, Nos. I and XII by his assistant Mons. Guérin, and the rest by Major Semple, R.A.M.C., Surgeon Andrews, R.N., and myself.

In all experiments on rabbits, guinea-pigs, and dogs, full sized healthy animals were employed. Subcutaneous injections were made in rabbits and guinea-pigs under the skin of the abdomen, and in dogs under the skin on the inner aspect of the thigh. Intravenous injections in rabbits were made into the marginal vein of the ear, and all rabbits and guinea-pigs operated on were distinguished by a metal disc bearing number riveted in the ear.

Dr. Calmette draws the following conclusions:—

1. Antivenomous serum has a very high antitoxic power, and its preservative action manifests itself almost instantaneously when injected into the veins. Injected subcutaneously it manifests itself in two or three hours.

2. By the methods indicated above the antitoxic power of the serum can be easily tested.

3. The duration of the immunity conferred by the serum is short. It is longer when the quantity of serum injected is more considerable. Its principal characteristic is that it is very rapid.

4. The serum is very easily kept, as it does not lose its antitoxic properties when heated to 60° C. (140° F.).

5. There is occasion for its general employment in every country where venomous serpents exist. The Governments of India and of Australia should therefore be invited to create as numerous posts for inoculation as possible, and instruct the native medical practitioners in the method of employing the serum. All these posts should be provided with two syringes and sufficient serum for one injection.

Antivenomous serum can easily be prepared in India by immunising horses, but as the duration of the period of immunisation is very long (at least sixteen months to obtain an active serum), it is necessary to have well equipped laboratories with a personnel well trained in these kinds of manipulations.

Until the English Government is able to establish special laboratories in India and in Australia, for the preparation of and for testing (*le contrôle*) the serum, the Pasteur Institute of Lille will be able to supply as much serum as may be necessary—up to 30,000 doses per annum.

In order to render a service to the English Government, and the Government of India, the Pasteur Institute at Lille agrees to deliver the serum at the net cost of its preparation, that is 2s. per dose of 10 c.c., packing included, the cost of postage falling on the colony or Government interested.

The serum intended for the Government of India, as also that intended for the Medical Service of the Army and for the Royal Navy, could be forwarded directly by the Pasteur Institute, Lille, to London, and tested by the bacteriological laboratories of the Indian Medical Service, and of the Netley and Portsmouth Schools.

It would be desirable, in the interest of the English population in India, that the Government should render the employment of the serum obligatory for the treatment of all bites of venomous snakes by the native medical practitioners.

The following instructions are packed with each dose of antivenomous serum:—

“Antivenomous Serum.

“For the treatment of bites of all venomous snakes and of scorpions.

“Prepared by Dr. A. Calmette.”

"Instructions for Use."

"Antivenomous serum is the serum of the horse immunised against the venom of snakes. It retains its properties if kept in a cool place and in the dark without removing the bottle from the box in which it is enclosed. At a temperature of over 50° C. (122° F.) the serum is liable to become inactive.

"*Preventive Power.*—The preventive power of the serum is at least 20,000, that is to say, it is sufficient to inject the rabbit with a quantity of serum equal to $\frac{1}{20000}$ of its weight, preventively, to enable it after twenty-four hours to support a dose of one milligr. of dried venom of average activity from the cobra capella, without being made ill. This dose kills a control rabbit in under four hours.

"*Therapeutic Action.*—Antivenomous serum when injected in sufficient quantity into persons bitten by snakes prevents the action of the venom, if the intoxication has not reached a period too advanced. It should be injected as soon as possible after the bite. The intervention is still very efficacious one and half hours after the bite in the case of full grown men, as they rarely succumb in less than three hours after the bite of the most dangerous species of snakes.

"The serum is active as regards the venoms coming from all the species of snakes met with in all parts of the Old and New Worlds. It has been proved with the venoms of the cobra capella, and of the trimoresurus of Asia, the najahaje and the cerastes of Africa, the crotalus of America, the bothrops of Martinique, the varieties of the pseudechis and the hoplocephalus of Australia, and the vipers of Europe.

"The dose to be employed varies with the species of the snake which inflicted the bite, with the age of the person bitten, and with the time of intervention.

"As a general rule 10 c.c. is sufficient for children under ten years and 20 c.c. for adults. Nevertheless when the snake-bite has been caused by one of the most dangerous species of snakes, such as the cobra capella, the najahaje, the crotalus, the bothrops of Martinique it will be advisable to at once inject a double dose.

"*Treatment of Venomous Bites.*—The first precaution to take is to bind the member bitten tightly by means of a string, or a handkerchief, as close as possible to the bite and between this and the trunk.

"Wash the wound with a fresh solution of hypochlorite of lime diluted to about one part in sixty parts of boiling water and containing as nearly as possible 800 to 900 parts of chlorine in 1,000 parts.

"Inject a dose of antivenomous serum into the subcutaneous cellular tissue of the right or left flank with the usual antiseptic precautions.

"Then inject with the same syringe in the track of the bite and around it in three or four different places about 8 c.c. to 10 c.c. of the solution of hypochlorite of lime. These injections are made in order to destroy the venom *in situ* which has not been absorbed. After this the ligature may be removed from the member. Rub the sick person, give coffee or tea to drink, and cover warmly so as to cause sweating.

"Do not give ammonia or alcohol as they are only injurious to the sick person and to the treatment by serum.

"It is useless to cauterise the bite with a hot iron or by chemical caustics.

"*N.B.*—The doctors who use antivenomous serum are requested to communicate the results obtained at once to Dr. Calmette, Director of the Pasteur Institute, Lille, France."

In the foregoing I have detailed the experiments carried out under the direction of Dr. Calmette, and given the deductions which he draws from the results obtained. From the practical point of view of treatment these deductions are briefly—

1. That the injection of a sufficient dose of antivenomous serum prevents the toxic action of a lethal dose of venom given later. In practice this category would embrace those cases in which, by ligature of the bitten limb, the venom has been kept out of the general circulation until after the patient has been injected with serum.

2. That the injection of a sufficient dose of serum prevents intoxication by a lethal dose of venom given previously, provided too long an interval has not been allowed to elapse between the injection of the venom and the serum, *i.e.*, where the case has not been allowed to proceed too far towards a fatal issue. This category would embrace those cases in which ligature was not employed, or was imperfectly applied, and the poison has been absorbed into the general circulation.

3. That owing to the greater resistance of man to the toxic action of venom, as compared with that of smaller animals, such as dogs, rabbits, and guinea-pigs, a much smaller dose of serum proportionately will prevent intoxication in man.

4. That as the toxic principle of all snake venoms is the same, serum will prove equally beneficial in bites by colubrine or by viperine snakes.

It is only by the application of the treatment by antivenomous serum to all cases of snake poisoning in man that its true value as a remedy will be ascertained, and experimental evidence appears to me to fully justify its use. Sir Joseph Fayer has collected statistics as to the duration of life in sixty-five cases of

snake-bite in India due to the cobra, daboia and bungaris. Of those cases 22.96 per cent. died in under two hours, 24.53 per cent. died in from two to six hours, 23.5 per cent. died in from six to twelve hours, 9.36 per cent. died in from twelve to twenty-four hours, 21.10 per cent. died after twenty-four hours.

Correspondence.

PLAGUE ON S. S. CARTHAGE.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In your issue of July last, the following statements appeared:—"In June of last year two cases of plague occurred on board the steamer *Carthage* on her voyage to Europe. The *Carthage* took as passenger a doctor, who during the voyage intended to make experiments with what were supposed to be plague microbes. Acting on instructions from the medical authorities, the Government of India has issued orders that no plague microbes or cultures are to be taken on shipboard without a certificate from the Health Officer, &c."

You will probably admit, Sir, that the inference which your readers were invited to draw from the foregoing paragraph was that plague occurred on the *Carthage* in consequence of the medical passenger referred to making experiments during the voyage with plague microbes.

I have the best of reasons for surmising that this inferential accusation of culpable, nay criminal, carelessness emanates from the Port Sanitary Authorities of Bombay. Kindly permit me to detail the circumstances alluded to.

The *Carthage* sailed for England on July the 2nd, 1898, not in June. Besides myself the only other medical man on board was Captain Armstrong of the I. M. S. As I had been engaged in bacteriological work in Bombay and had in my possession some cultivations of the plague bacillus, which I wished to convey to the late Professor Kanthack, it is probable that I am the "doctor" referred to.

The first case of plague was discovered on the 4th, in the person of a native fireman, who up to the day of sailing, had resided in one of the infected quarters of Bombay. He was landed at the Aden quarantine station on the 9th. The second case, which consisted of a suspicious buboe only, was practically well by the time we reached Port Said. This man also had come direct to the ship from an infected quarter.

My plague cultivations consisted of samples of broth culture contained in hermetically-sealed glass tubes. None of these tubes have yet been unsealed; they all remain undisturbed in the same package in which I placed them in the Petit Laboratory.

The Port Sanitary Authorities of Bombay seem to be singularly uninformed on the subject of the appearance of plague on the *Carthage* in 1898. May I suggest that, in future, rather than "instructing" the Government of India on the basis of what they imagine to have happened on boardships to which they have given a clean Bill of Health, these gentlemen should ascertain the real reason why cases of incipient plague were permitted to pass undetected through their Inspector's hand.

With the statement that I intended to make experiments with plague microbes, whilst on board the *Carthage*, I will not now deal. Such an assertion is made by a gentleman who can have little knowledge of the requirements of experimental bacteriology, and who too lightly assumes an absence of moral responsibility in others.

Yours etc.,

WILFRED WATKINS-PITCHFORD, F.R.C.S., Eng.

51, HAGLEY ROAD, EDGECASTON.

September 7, 1899.

[We are glad to publish Mr. Watkins-Pitchford's explanation. The statement made was copied from the daily press, in which we saw it. The "medical authorities" referred to in the note objected to are not the Port Sanitary authorities. We confess to not understanding the reference in Mr. Pitchford's last paragraph.—Ed.]

THE EXTERMINATION OF MOSQUITOES.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—It is, I believe, generally considered that the breeding grounds of the malaria-carrying species of mosquito (*viz.*, those with spotted wings) are few and far between. Major Ross has written with regard to the practicability of exterminating this variety of mosquito: "The breeding grounds of the spotted-winged varieties seem to be so small and isolated that I think it may be possible to exterminate this species under certain circumstances." He further states that in the Cantonment of Secunderabad he was able to find the larvae of spotted-winged mosquitoes only after a long search, in a single little pool which could be filled up with a few cartloads of town rubbish.

It would be fortunate if this were the case in all places where malaria is prevalent, but it is an important, though—from the point of view of their extermination—an unpleasant fact that in some places in India where malaria is exceedingly rife this "dangerous" species of mosquito chooses for its breeding ground rice-fields near habitations, and large areas of water which from their nature are difficult to drain or remove. Such at least is the case in parts of Travancore.

On first coming to Quilon I searched for the spotted-winged varieties of mosquitoes in out-of-the-way pools and stagnant puddles of rain water away from habitations, neglecting the rice-fields which surrounded my bungalow on every side. For many weeks I was not able to obtain any of their larvae and was the more surprised at this, as I was frequently able to catch spotted-winged mosquitoes in my bungalow, which had settled themselves on the curtains and clothes hanging up in the rooms. After many fruitless searches in every pool near the Cantonment, I at last turned to the rice fields round the bungalow, which were then covered for the most part with water to a depth of three or four inches; and here I found the larvae of the spotted-winged varieties of mosquito in profusion. Since then from these rice-fields and from other large areas of water in the Cantonment I have frequently been able to obtain a supply of these mosquitoes when none could be got from any pool or small collection of water near.

This circumstance, that apparently in many parts of the country where malaria is most prevalent the "dangerous" varieties of mosquitoes are found to breed in rice-fields and other large areas of water, must add considerably to the task of exterminating them from such localities, should such at any time be attempted.

Yours faithfully,

QUILON, TRAVANCORE, } S. P. JAMES, *Capt., I. M. S.*,
September 27th, 1899. } 19th Regt. M. I., Quilon, S. India.

BAD TEETH AMONG SEPOYS.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I was glad to see the two articles about bad teeth and gums in your September number. There is a lot of nonsense talked about scurvy,—as if the gums were the only part of the body that could not be locally diseased! I was thinking of writing similarly a long time ago about bad teeth being mistaken for scurvy in the army.

CHITRAL, } Yours, &c.,
9th September 1899. } M. CH.

UNPIGMENTED AMCÆBÆ.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I have read the *Indian Medical Gazette* just received and have been reading Captain Fearnside's paper which interested me very much. I have repeatedly seen unpigmented amcæbæ in

chronic malarial cases in afebrile intervals, and was puzzled by them, as according to the books only crescents should be found there. * * *

I am afraid you will find it difficult to get contributions from men in military employ. Strictly, their contributions should filter to you through the S. M. O., District P. M. O. and Command P. M. O.; and this procedure does not encourage the production of papers. * * * I could not examine those cases * * *

* * * especially as urine glasses, test tube stands, guaiacum and ozonic other are unknown luxuries in station hospitals.

Yours, &c.,

R. A. M. C.

Service Notes.

THE INDIAN MEDICAL SERVICE DINNER.

THE annual dinner of the I. M. S. was held at the U. S. Club, Simla, on 25th September; Surgeon-General R. Harvey, C.B., D.S.O., F.R.C.P., the Director-General, was in the Chair. Eighteen members only were present. We think, if more general notice had been given, more men would have attended. The Director-General made an excellent speech in proposing "Prosperity to the Indian Medical Service." He pointed out that another year of stress and strain had been passed. The Local Governments were short of civil surgeons, he said; this was owing to the rush for furlough after the plague and wars of 1897, and the necessity of still providing men for plague duty. However, some 90 men are coming out again soon, including the new batch from Netley, and the Surgeon-General hoped the gaps would soon be filled and a margin for furlough left. "I think," said Surgeon General Harvey, "that the extreme tension of the last few years is over, and that the good ship I.M.S., having weathered the storm, is gliding into smoother water, essentially sound and uninjured." He pointed out the improvements which have been or are to be effected in the Jail and Chemical Departments, and that before long we shall have a new Alienist Department and a new Bacteriological Department, and so enable us to take our proper place as pioneers of progress. "Now that our great jails are managed by medical officers, a great improvement in the health of the prisoners has taken place, as shown by a death-rate of only 22.5 per mille in malarious Bengal." Hitherto an occasional enthusiast like Vandrye Carter, D. D. Cunningham or Ronald Ross has done good work which has redounded to the credit of the service, but it has not been possible for the busy civil surgeon to give the necessary time and attention to such study. . . . In surgery, the service continues its splendid work. . . . In all branches there are signals of progress which augur well for the future. No service in the world presents greater opportunities of doing good, and the opportunities, I am glad to think, are thoroughly taken advantage of. The last batch of probationers at Netley, Surgeon-General Harvey was told, was as good as could be desired.

We would recommend that, as 'it is a long cry' to Simla, that another annual dinner be held in Calcutta in December. This would permit of many men from Bengal, North-Western Provinces and Central Provinces attending.

Of the 39 officers of the Indian Medical Service who attained to the rank of Major during the year 1899, thirty-three are in civil employ and only six remain in military employ.

We are glad to notice that all medical officers in Darjeeling escaped unharmful during the recent disastrous landslips. Colonel Hendley's house escaped untouched; Lt.-Colonel E. Mair lived in the Club, which was uninjured; the house of Lt.-Colonel Lewtas, the Civil Surgeon, had a narrow escape. Several of the out-houses being destroyed; Major H. J. Dyson's beautiful house and gardens at Singamarri suffered little damage, but his servants' houses were destroyed. The Eden Sanatorium entirely escaped damage. The Military Depôts at Jalapahar and Lebong suffered very little.

SURGEON-LIEUT.-COL. J. MOORHEAD, I.M.S. (*retd.*), was a candidate for the Professorship of Medicine in Queen's College, Belfast, where he is now practising. Dr. Moorhead was for many years a

Civil Surgeon in Bengal, and more recently at Simla. He will certainly be appointed to the new Lectureship on Tropical Diseases in Belfast.

THE Emperor of Austria has sanctioned the conferring of the honorary degree of M.D. on Dr. Theodor Duka, of London, formerly Surgeon-Major, I.M.S. Dr. Duka is the author of numerous writings on medical and surgical subjects contributed to this *Gazette* and other papers. He also wrote a life of the Hungarian scholar, Cosma de Kuros, whose tombstone, erected by the Asiatic Society of Bengal, is still to be seen at Darjeeling.

RETIRED officers of the I.M.S. have been in luck of late. Owing to the boom in tropical medicine, many new appointments have been made and have fallen to I.M.S. men, e.g., Major Ross at Liverpool; Andrew Duncan and Oswald Baker at the London Tropical School; Dr. Crombie at Middlesex Hospital; Deputy Surgeon-General Macdonachy at Aberdeen; Dr. Anderson, C.I.E., at St. Mary's, and now Dr. Moorhead at Belfast.

WE are glad to see that the committee appointed has made many excellent suggestions for the improvement of Haslar School as a training school for naval medical officers. The supply of clinical material should be inferior only to that at Netley. Even more urgently necessary was the re-equipment of all ships-of-war. A long list of surgical instruments and appliances is given, but it is strange to note that, while an X-ray apparatus and materials for stopping teeth are provided, yet an ophthalmoscope or laryngoscope are not considered necessary!

WE are glad to read that, to the *British Medical Journal*, the Indian Medical Service has always been "an abiding interest, commanding warm sympathy and judicious advocacy." We thank our contemporary. Our only complaint has been that it did not understand our wants (because we talked less about them), and has often confounded the views and aspirations of the sister service with those of the I.M.S. As a body (we believe) we chiefly want to be let alone.

MAJOR A. E. ROBERTS, I.M.S., will probably succeed Major Leslie as Secretary to the Director-General at Simla, when the latter goes on furlough. Major Roberts for a short time officiated in the appointment some years ago.

MAJOR A. E. COLEMAN, I.M.S., and Major Strickland, I.M.S., will shortly go on furlough.

THE Civil Medical Administration in Burma will now be put under Colonel Little, as Inspector-General, and the Burma Jail Department under a separate head. It is said that Major R. E. S. Davis, M.B., I.M.S., for many years Superintendent of the Rangoon Central Jail, will be the first Inspector-General of Jails in Burma.

MAJOR J. F. DONEGAN, R.A.M.C., is S.M.O. with the Cavalry Brigade, and Lt.-Colonel S. H. Carter, R.A.M.C., S.M.O. of the Infantry Brigade, gone to S. Africa. Major M. K. Kerin is in charge of the Brigade Division, Field Artillery.

THE R.A.M.C. are to have a new corps uniform; the facings are to be pale-blue instead of black, with pale-blue piping instead of red. It is to be hoped that the uniform of the I.M.S. will be left untouched.

THE Native Field Hospital, gone to the Transvaal War, was in charge of Major W. H. W. Elliot, M.B. (Lond.), I.M.S., and Captain G. H. Frost, M.B., I.M.S.

MAJOR D. G. CRAWFORD, I.M.S., will probably shortly go on leave; his place as Civil Surgeon of Alipur will probably be filled by Major C. R. M. Green, I.M.S.

WE understand that Lieutenant-Colonel Lewtas, I.M.S., Civil Surgeon of Darjeeling, will shortly go on furlough, and will probably be succeeded by Lieutenant-Colonel A. Leahy, F.R.C.S., I.M.S.

IT is said that in future the Civil Surgeon of Alipur will have to live in Alipur, and that for him practice in Calcutta will be forbidden.

CAPTAIN H. EARLE, I.M.S., goes to Arrah as Civil Surgeon, and Captain A. Gwyther, I.M.S., to Hooghly, to relieve Lieutenant-Colonel R. L. Dutt, who is about to retire.

MR. MALCOLM MORRIS devotes several paragraphs in the last issue of his excellent paper, *The Practitioner*, to the useless discussion of the relative merits of Netley and other Tropical Medical Schools, but his argument that Netley is full only of "pathological wrecks" is overstating the matter. If Mr. Morris had spent a winter at Netley, he would have found plenty of "ague cases" for him to treat; the attacks of ague which occur when men return to cold climates are often very severe, and it is not uncommon to see dozens of such cases landed from troopships in one day at Netley. Moreover, a man need not be a "pathological hulk" to be passed as unfit for further active service, nor will the cases admitted to any London hospital be much different. It is to be presumed that sailors landed from foreign-going steamers will also "have been liberally dosed with quinine months before." Most steamers trading with foreign ports carry surgeons and even the ship Captain knows enough to dose his fever-stricken sailors with quinine, so that argument against Netley falls through. We would not be concerned to defend Netley if it had not improved on what it was a dozen years ago, but it certainly has improved; to mention only one point, the training now given in pathology and bacteriology by Prof. Wright is eminently useful and thorough, and especially adapted to the needs of men who will work in the tropics.

THE October issue of the *Journal of the United Service Institution of India* contains (p. 431) a short article by M. CH. (Lieutenant-Colonel C. McCartie, I.M.S.), on a new pattern stretcher devised by him. It can be carried by four men. It only weighs 10lbs., compared with the regulation stretcher which weighs 30lbs.

Gazette Notifications.

BOMBAY.

Major M. A. T. COLLIE, M.B., C.M., I.M.S., is appointed Superintendent of Matheran, and is invested with the powers of a Magistrate.

Lieutenant-Colonel D. C. DAVIDSON is reappointed Superintendent of Mahabaleshwar for one year.

Major C. H. L. MEYER acts as Professor of Ophthalmic Surgery in Grant Medical College in addition to his own duties.

Lieutenant J. E. ROBINSON, I.M.S., received charge of Rajkot Prison from Assistant-Surgeon BOCARRO on 14th September.

PUNJAB.

The services of Major J. W. RODGERS, I.M.S., are placed permanently with the Punjab.

The leave of Major H. M. MORRIS has been extended (*m.c.*) for six months.

FOREIGN DEPARTMENT.

Lieutenant-Colonel P. F. O'CONNOR, M.D., I.M.S., is appointed to act in medical charge of the Bundelkund Political Agency from 1st August in addition to his military duties.

N.-W. P. AND OUDH.

Major L. PISANI, F.R.C.S., I.M.S., is transferred as Civil Surgeon from Agra to Aligarh.

BENGAL.

Major J. G. JORDAN, I.M.S., is appointed Civil Surgeon of Rajshahi, vice Lieutenant-Colonel FRENCH-MULLEN transferred to Patna.

Lieutenant-Colonel W. OWEN, M.D., F.R.C.S., I.M.S., Superintendent, Patna Opium Factory, is granted 5 weeks extension of leave (*m.c.*).

Captain A. GWYTHHER, I.M.S., made over charge of Rajshahi to Major Jordan and is transferred to Shahabad District.

THERAPEUTIC NOTES AND PREPARATIONS.

Treatment of Ulcerative Stomatitis.—Dr. Henry Ashby (*Ed., Med. Jour.*, January, 1899) calls attention to the diminished doses of this salt now generally ordered as compared with those formerly recommended. He has tried it in scarlatina, diphtheria, tonsillitis, and various forms of stomatitis, but cannot say that he has found it of much, if any, use in any disease, except in ulcerative stomatitis; in this affection its effects are most striking.

Concerning the pathology of this disease, and how far we can admit its claims to be considered a "self-standing disease," there is not much to be said. It does not occur in infants prior to the eruption of the teeth; that children who are attacked are mostly in a low state of health; and that this disease appears to be infectious, or, at least, occurs in small epidemics. Various searchers have from time to time proclaimed the discovery of a specific organism in the discharges from the gums, the most recent being Bernheim, who, in thirty cases, found a motile bacillus and a spirochete. It is possible that more than one disease may be included under the name of "ulcerative stomatitis."

The attack is ushered in with fever; there is tenderness of the gums and teeth, with excessive salivation; the lesions are confined to the gums and cheek, and possibly the tongue. The gums are swollen, often very markedly so; they readily bleed; a foetid purulent discharge issues from their edges, where they come in contact with the teeth. There is usually, also, a sharply cut ulcer, perhaps half an inch to an inch in diameter, with a yellowish base, opposite the lower molar of one side; the ulceration may involve the fissure between the gums and the cheek, and also the tongue on the corresponding side. In those cases where there is this form of stomatitis present in young children who have only cut their incisor teeth, the only part of the gums affected is that round the teeth, and there may be a yellowish infiltration of the surface of the mucous membrane of the lip which comes in contact. The position of the deep ulcer found opposite the lower molars is no doubt determined by the action of the buccinator muscle in chewing. This muscle presses the bolus of food between the molars, and the friction of the molars against the mucous membrane gives rise to the ulcer. In a healthy condition of the mucous membrane it does not occur.

Treatment.—Ashby recommends chlorate of potash in 3 to 5 gr. doses every 4 hours. It acts better internally than applied locally.

[Recently we have treated a severe attack of ulcerative stomatitis in a strong healthy Burman prisoner by brushing over the buccal membrane and gums daily with tincture of iodine and free use of a iodine gargle (3j to 1 pint). He was cured in a few days.—*Ed., I. M. G.*]

THERAPEUTIC PREPARATIONS.

Messrs. Burroughs Wellcome and Company have recently added to their admirable list of "soloids" lead and opium soloids, each composed of acetate of lead (gr. 2) and tincture of opium (min. 20). These soloids form a very convenient method of carrying about materials for "lead lotion." We have found them readily soluble in warm water. The same firm's "Saxin," aptly named the "sweetest thing on earth," is of the greatest value in the treatment of diabetic and gouty conditions, as a substitute for sugar.

Chinosol is rapidly making itself known as a cheap and reliable disinfectant. It has been used by many surgeons for eye-operations. It can be obtained in very elegant tablets and in the form of a powder for use as a general disinfectant, and has the advantage of being almost inodorous itself, therefore it removes, not merely hides, objectionable smells. It is sold by B. Kuhn of St. Mary at Hill, London, and by all chemists.

Contrexeville Water (Source de Pavillon).—It seems hardly necessary to sound the praises of this celebrated water from Contrexeville, the "green valley in the heart of the Vosges." Its medicinal value was acknowledged forty years ago by Trousseau and Charcot and more recently by Sir Dyce Duckworth and Professor Potain. The cure has been written of by Ernest Daudet and Octave Feuillet; its virtues have been tested by statesmen like Lord Salisbury and Lord Cromer. This mineral water contains bicarbonate, sulphate and chlorides with traces of arsenic and silica. It is largely used in the 'cure' of gout, lithiasis, rheumatic disorders, and some forms of diabetes. It is by no means unpleasant to take, and for private use it is supplied in large bottles at only a rupee a bottle. It seems to us to be admirably adapted to many ills that Englishmen in India suffer from; it is one of the few aperient waters that can be safely prescribed for those who have suffered from dysentery or chronic bowel complaint. It should also be used with success in the treatment of that most common disease of educated natives of India, viz., diabetes. Messrs. E. Seconde & Co., of Calcutta, are the sole agents in India, but the water is obtainable from all respectable chemists.

Antikamnia is an American remedy which has 'come to stay.' For the treatment of pain it is rivalled only by opium, and its peculiar merit is that it can be used as a substitute for that dangerous drug or even in the treatment of the opium habit. It has no toxic effect and no pernicious drug habit is induced by its

use. It is prescribed in powder (gr. v) or in tablets or in tablets mixed with codeine sulphate (gr. i). It is one of the new drugs which can be recommended to the profession.

Chloroform Water as a Preventive of Accidents after Chloroform Anæsthesia.—Weber (*Bull. Gén. de Thérap.*, April 1899) says that the nausea after chloroformisation may be avoided if the patient will take chloroform water for several weeks before undergoing operation, so as to accustom the system to it. His attention was called to this fact by the absence of nausea after operation in the case of two patients who, on account of digestive disturbances, had taken chloroform water after each meal for several weeks. As the taste and smell of chloroform are repugnant to some persons, the following mixture is recommended:—

R̄ Aq. Chloroform 3 vi
Sp. Ment. Pip. } aa drops iv
Sp. Anis.

Filter after twelve hours.—(*Practitioner.*)

Hæmorrhoids.—Tar has been strongly recommended in the treatment of hæmorrhoids. The following ointment may be used:—

R̄ Tar, } Of each 46 minims.
Extract of Belladonna,
Glycerine, 1 fluid ounce.

M. Sig.: To be applied locally morning and evening.

The pain and irritation accompanying inflamed hæmorrhoids may be quickly relieved by local washing with a weak solution of bichloride—about 6 ounces of a 1 to 10,000 solution. Immediately after this the patient should introduce a tampon of cotton impregnated with the following ointment:—

R̄ Lanolin, 1½ ounces.
Vaseline, 5 drachms.
Distilled water, 1 fluid ounce.

M. Sig.: For external use.

These applications should be made a number of times each day.

The following ointment may be used:—

R̄ Camphor lanolin, 2 ounces.
Castor oil, 3 drachms.
Precipitated chalk, 1½ drachms.
Hydrobromate of cinch, 30 grains.

Monin (*Méd. Mod.*, Nov. 4th, 1896).—*Practitioner.*

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscription to the *Indian Medical Gazette* Rs. 12, including postage.

BOOKS, REPORTS, &c., RECEIVED.

The Polyclinic, No. 2.
The Bombay Jail Report.
The Bengal Vaccination Report.
The Annual Report of Civil Veterinary Department.
The Report on Madras Medical Institutions.
The Report on Madras Civil Hospitals, &c.
The Imperial Bacteriologist's Report.

COMMUNICATIONS RECEIVED FROM:—

Lieutenant T. H. Delany, I.M.S., Samana; Major L. A. Waddell, I.M.S.; Lieut.-Colonel S. H. Browne, I.M.S., Lahore; Colonel T. H. Hendley, I.M.S., C.I.E., Darjeeling; Lieut.-Colonel C. J. McCartie, I.M.S., Chitral; Major J. W. Leslie, I.M.S., Simla; Major F. J. Drury, I.M.S., Calcutta; Captain L. Rogers, I.M.S., Muktesar; Major J. H. T. Walsh, I.M.S., Berhampur; Major P. P. Maynard, I.M.S., Hazaribagh; Major C. W. Strickland, I.M.S., Burma; Lieutenant W. G. Liston, Hingoli; Lieut.-Colonel Maitland, I.M.S., Madras; Lieut.-Colonel E. Lawrie, I.M.S., Hyderabad; Lieutenant Guidney, I.M.S., Jhelum; Captain A. E. Berry, I.M.S., Captain Bruce Seton, I.M.S., Goona, C.I.; Captain C. Duer, Rangoon; Major C. R. M. Green, Dacca; Mr. A. E. Silk, Darjeeling; Major W. M. Burke, Karachi; Lieut.-Colonel W. K. Hatch, I.M.S., Bombay; Dr. Arnold Caddy, Calcutta; Major D. M. Davidson, I.M.S., Delhi; Dr. K. Das, Calcutta; Captain P. W. O'Gorman, I.M.S., London; Major R. H. Charles, I.M.S., Calcutta; Lieut.-Colonel T. Grainger, I.M.S., Durrhunga; Major Andrew Buchanan, Nagpur; Mr. Norman Rudolf, Simla; Messrs Seconde & Co., Calcutta.

Original Articles.

THE COLLECTION OF MOSQUITOS
AND THEIR LARVÆ.BY S. P. JAMES, M. B.,
CAPTAIN, I.M.S.

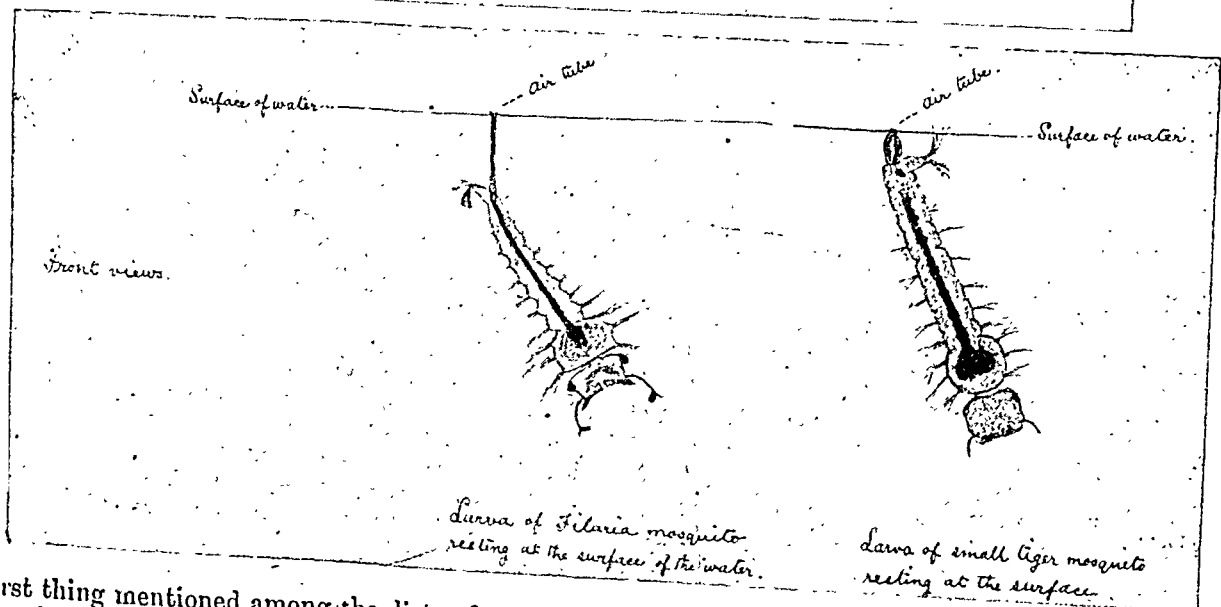
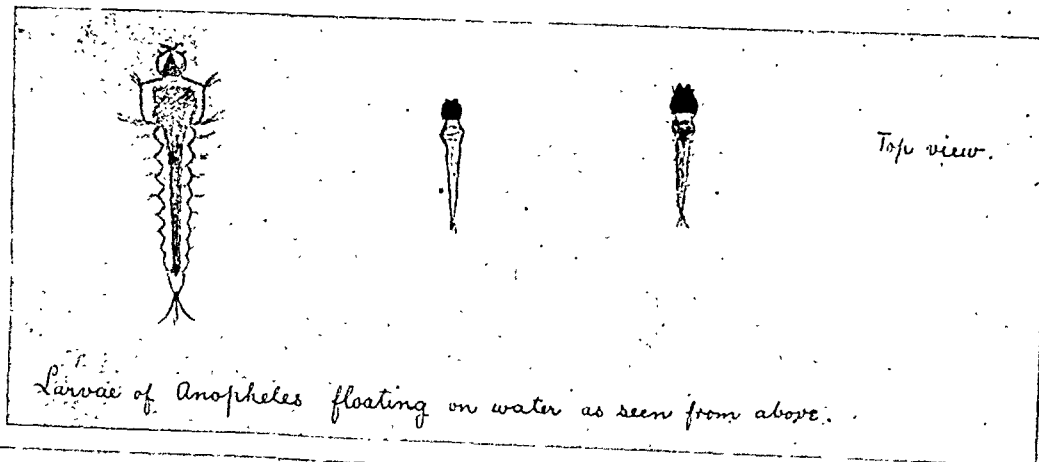
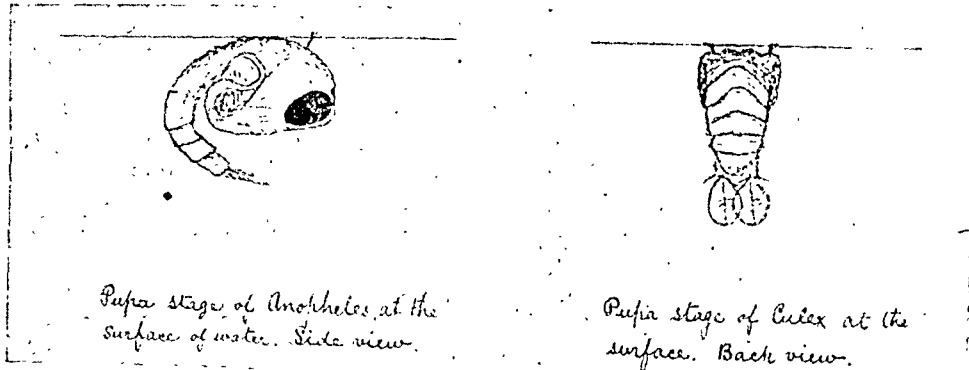
In a pamphlet on collecting mosquitos issued some time ago from the British Museum, the

depends on that method alone for obtaining mosquitos will not find his collection increase very quickly in numbers.

There are two ways of collecting mosquitos, viz. :—

(1) To catch them in the adult condition.

(2) To collect their larvæ from pools of water and keep them until they have developed. Both these methods have advantages in different circumstances, but as regards the first method, we may dismiss at once (from its being too



first thing mentioned among the list of articles required, is an "Entomologists collecting Net of Book Muslin." However useful such a net may be for collecting butterflies, anyone who de-

tedious and unproductive) the catching of mosquitos in the open air. The method is, however, of great use in houses and hospitals, and barracks, and, by showing us what varieties

of mosquitos are most prevalent in certain buildings or places, indirectly gives us a clue to the parts of a town or cantonment where we are most likely to find the larvæ of any particular mosquito.

To catch mosquitos in rooms or hospitals or tents, all that is necessary is to gently place the mouth of a test tube or small bottle over them as they sit asleep on the walls or curtains. In the dark corners of almost any room in India many mosquitos may be found and caught in this way. A favourite resting place for them is on clothes which may be hanging up either on the wall or in wardrobes, and in hospitals they are frequently to be found on any bedding or clothes which may be about. Mosquitos caught in this way may be kept in the test tubes or small bottles in which they were captured (a piece of coarse muslin being tied over the mouth of the tube or bottle to prevent them escaping), until it is desired to examine them, when they may be killed with a few whiffs of tobacco smoke or a drop of chloroform.

The Collection of Mosquito Larvæ.—If it is intended to study the development of an animal parasite such as the malarial parasite or the filaria sanguinis hominis in the mosquito, the advantage of getting a supply of mosquitos which it is known have not previously fed on the blood of any animal or of man, is obvious, and in such a case it is essential to get them while in their larval stage and keep them until they have developed. So again, before any attempt at the extermination of any variety of mosquito can be made, a knowledge of the appearance of its larvæ and of its habits and haunts is also essential. Once having learned for example, what the larva of anopheles looks like, all the larvæ in any pool where they may be found—provided the pool is small enough—can be easily destroyed.

The appearance of the larvæ of the commoner varieties of mosquitos is probably familiar to many. If any one who has not seen them will place in his garden a tub of ordinary well or rainwater and let it remain a few days there, he will find in it at the end of that time a number of slender, segmented, wriggling animals from $\frac{1}{16}$ th to $\frac{1}{4}$ th of an inch long, darting about with a jerky wriggling movement, and now and then coming up to the surface and resting there to breathe (which they do in most kinds by means of an air-tube attached near the tail). These are the larvæ of "culex"—the commonest genus of mosquito. The four stages of the metamorphosis of the mosquito may be seen in the tub at the same time, viz.:—

- (a) The raft-like collection of eggs floating on the surface;
- (b) The larva floating with its head downwards.

(c) The pupa of conical shape, floating with its head upwards, and (d) the perfect insect resting on the water for a moment before it takes flight.

The characters of the larvæ can best be studied by transferring the water containing them from the tub to a glass bottle. Then those larvæ which have risen to the surface to breathe, and are resting there, are seen to be wholly immersed in the water with the exception of the tip of their air-tubes, and they have the characteristic appearance of seeming to hang suspended by means of these tubes from the surface of the water. The rough sketch of the larva of the small "tiger" mosquito, as it appears when observed in this way, will I think better than any written description enable any one to recognise these larvæ without difficulty.*

When going out to search for mosquito larvæ, I take with me an ordinary white saucer and several wide-mouthed bottles. On finding a pool in which there are larvæ—the larvæ are more easily seen at the shallow edges of the pool—the saucer can be scooped through the water beneath them, and many will be caught. It is necessary, however, to wait a moment or two before drawing the saucer through the water, as the larvæ sink beneath the surface to the bottom of the pool on its approach, and time must be given them to rise to the surface again.

Then the tadpoles, etc., which may have been caught with them are taken out of the saucer, and the different kinds of larvæ—which are easily distinguished from each other as they lie in the water in the saucer—can be sorted out and placed in the different bottles, a separate bottle being kept for each variety of larva, as far as possible, so that at the end one has practically only anopheles larvæ in one bottle, culex larvæ in another, etc.

When sufficient larvæ are obtained in this way the bottles, which are about half or two-thirds full of the water containing the larvæ, are closed with a piece of coarse muslin and allowed to stand for a day or two, at the end of which time many mosquitos will be found to have developed.

In the same pools with mosquito larvæ one will, of course, come across the larvæ of other diptera which sometimes may be mistaken for mosquito larvæ. A common one to meet with is a bright red wriggling little creature called from its colour the bloodworm. An old hospital orderly of this regiment, who I believe used at one time to collect mosquito larvæ for Major Ross, walked eight miles some months ago to bring me a number of these larvæ, as he assured me they were the larvæ of the spotted-winged mosquitos! They are, I believe, the larvæ of the Chironomus Plumosus.

Another point which is worth remembering when one is searching for mosquito larvæ is, not to pass by any pool or collection of water, because one sees frogs or even minnows in it. Frequently in spite of the presence of both frogs and minnows one is able to find many anopheles and other larvæ in such pools.

The following short description of the most important mosquitos and their larvæ from a medical point of view will, I hope, with the aid of the rough sketches, render their detection easy:—

(1) *The "Malaria-carrying" Mosquitos.*—The majority of anopheles are of a fawn or light brown colour, and excluding the proboscis are about $\frac{3}{16}$ inch in length. Body without distinctive markings. Legs long and slender. The wings have, practically without exception, four black spots on the less curved edge which are quite evident when the insect is resting on a wall. Another characteristic of these mosquitos is the fact that when they are resting on a wall their two posterior legs do not touch the wall. They look as if they were standing on their "noses" with their "hind legs" in the air!

Difference between the Male and Female Anopheles.—The male has plumose antennæ and palpi forming tufts in front of the head. In the female (which alone sucks blood) the antennæ though long are nearly bare.

The Larvæ of Anopheles.—In places where malaria is very prevalent, it will be found that anopheles larvæ are common and widely distributed. I think it may safely be said that there is only one rule with regard to the haunts of anopheles larvæ, and that is a negative one, viz., that they do not breed in pots or tubs of water, or in any pool which from its nature (e.g., a pool in a rock or on very rocky ground) practically may be considered as a pot or tub.

They can, as a rule, be found without difficulty in pools of water on fields, or on open areas, or by the roadside.

They are common in the water covering rice-fields and in any pool which may be left after a piece of ground has been newly dug up, which circumstance may account for the prevalence of malaria near newly turned soil. They have been found in running streams and in old wells.

Another common place to find them is in the small pools which are left between the rows of earth of potato-fields or of tapioca plants when these are planted in this manner.

Their larvæ are very easily recognised. They differ from the larvæ of *Culex* in having no air-tube. The result of this is that they lie flat at the surface of the water, and when looking down on them from above they look like little bits of brown stick, or thorns, floating on the surface. When very small their heads are quite black, and they appear not unlike very small safety matches floating on the water.

When larger they are brownish in colour and of the shape shown in the sketch. As they lie at the surface of the water they move from one part to another by a series of jerks in a horizontal direction. These jerky movements along the surface of the water are very characteristic of anopheles larvæ, and aid in distinguishing them from the larvæ of other mosquitos, in the larvæ of which, this horizontal movement, though it does occasionally occur, is not nearly so apparent or characteristic. The anopheles larvæ will be found most numerous near any leaf or plant which may be growing in the water, and they can often be seen feeding on the small green plants in the water.

From the above description and sketches, I think it will not be difficult for any one to recognise these larvæ.

(2) *The "Filaria-carrying" Mosquito.*—This is a mosquito second only in importance from a medical point of view to the anopheles. It presents the following characteristics:—Its length is about $\frac{3}{8}$ th of an inch. It is brown in colour, parts being light brown, and other parts a darker brown. It has no distinctive markings on its body or wings or legs. In some specimens there is a banding of the abdomen with light and dark brown bands, but this is not as a rule distinct. Neither legs nor wings are spotted. The female alone sucks blood.

Its larvæ.—This mosquito like the anopheles does not breed in tubs or pots of water. Its favourite breeding place is perhaps a quiet shady pool containing plenty of small green plants. It is, however, to be found in pools on open fields, in slowly running streams, and in the water of rice-fields. Indeed what has been said above with regard to the haunts of anopheles larvæ applies to the larvæ of this "Filaria-bearing" mosquito. The larvæ, as seen in water, are light brown, or sometimes greenish-brown, delicate, transparent animals nearly $\frac{1}{4}$ of an inch in length. Their heads are large and transparent, and have a very characteristic appearance due to the presence of two black and very prominent "eyes."

The air-tube is long and slender, and forms another characteristic by which they may be distinguished from other larvæ. Like the anopheles, these larvæ move at the surface of the water by horizontal jerks, but in shape and every other respect they are so unlike that there is no danger of confusing them with each other. The figure shows their appearance when looked at from the front through a glass bottle.

(3) *Non-Pathological Mosquitos.*—The only other mosquitos of which it is necessary to speak here, are those which from their striped markings are called "tiger" mosquitos. They are the commonest of all the mosquito tribe and are the type of the genus "*Culex*," as distinguished from the genus "*Anopheles*." There are

two kinds of "tiger" mosquitos, a large, and a small, and their importance from a medical point of view lies in the fact that the small variety may not unfrequently be mistaken for the filaria-carrying mosquito which sometimes has, as stated above, an appearance of banding of the abdomen. For this reason I have arranged in the following tabular form the chief differences between these two mosquitos and their larvæ, which will, I think, with the aid of the rough sketches enable them to be easily distinguished from each other.

I. Differences between the Mosquitos.

<i>The small "Tiger" Mosquito.</i>	<i>The "Filaria-carrying Mosquito."</i>
Length about $\frac{7}{8}$ inch.	Length about $\frac{7}{8}$ inch
Body, jet black flecked with brilliant white spots.	Body, brown in colour. No distinct markings.
Abdomen banded with black and white rings.	No white spots on body or abdomen, but sometimes indistinct banding of abdomen with light and dark-brown rings.
Legs spotted with brilliant white spots.	Legs brown. No white spots.
Wings not spotted.	Wings not spotted.

II. Differences between the Larvæ.

<i>The small "Tiger" Mosquito larva.</i>	<i>The "Filaria" Mosquito larva.</i>
It is pre-eminently the tub and chattie breeding mosquito seldom found elsewhere.	Does not breed in pots or tubs.
Colour dark brown and less transparent.	Colour light, with often a greenish tinge and more transparent.
Air-tube short, thick, and black.	Air-tube long slender and transparent.
Head, small and round. "Eyes" not prominent.	Head large and somewhat square. "Eyes" prominent.

With regard to the wide distribution which I have stated above is characteristic of the anopheles larvæ, it may not be out of place to mention here that, should other observers in malarious parts of India find a correspondingly wide distribution to prevail in such places, the extermination of this genus of mosquito will not prove to be such a simple matter as some would have us at present believe. At any rate it will not be effected by the aid of a few gallons of kerosene oil or by filling up a few small pools with rubbish.

HEAT APOPLEXY.

By C. J. McCARTIE, M.A., M.D., M.CH.,

LT.-COLONEL, I.M.S.

In order to prevent any misapprehension, I may premise that in this article the name "Siriasis" is synonymous with "Heat Apoplexy, a disease characterised by coma and hyperpyrexia after exposure to heat.

In his original article (*British Medical Journal* of the 19th March 1899), in which he advanced the theory that heat apoplexy was an infective disease and not caused by heat, Dr. Sambon chiefly relied on, what I may call, "the soldier argument." He showed that it had been repeatedly observed that soldiers fell victims to heat apoplexy, while civilians at the same place

and time were exempt. If heat were the cause of heat apoplexy, it would have affected both classes alike. It did not do so; therefore heat apoplexy could not have been due to heat.

This argument made the rather astonishing assumption that soldiers and civilians live under similar conditions. In my article in this journal in June 1899, I showed that the difference of the incidence of the disease on soldiers and civilians was chiefly due to the difference in their dress. Soldiers wear a dress which is not only warmer than that of civilians, but also one which, from its closeness, impedes the evaporation of the perspiration. Now, take a case in which all the conditions are the same on both sides, except the last, and that the weight carried was more unfavourable to those dressed as civilians, as in the example I gave, in which some soldiers were in uniform carrying 30lbs., and other soldiers were in loose plain clothes carrying loads of 40lbs. The men were of the same regiment, race, country and religion, marching together on the same road. None of the soldiers with the heavier loads in civilian dress fell out or seemed distressed. All the soldiers in uniform were more or less exhausted; several had fever (which I understand to be heat fever), and some were down with heat apoplexy (coma with hyperpyrexia), of which one died.

This experiment is repeated over and over again under conditions nearly similar except as to dress between native soldiers and civilian followers marching together in the hot weather, when it is found that the soldiers get knocked over by heat fever and heat apoplexy and the civilians escape.

However, I would not think of bringing forward these observations of my own, only that I know that similar exact experiments can be repeated by others thousands of times in every regiment and in every cantonment in the hot weather.

I know that soldiers differ from civilians in other respects as well as in dress, but the effects of dress alone can be ascertained by comparing soldiers in uniform with other soldiers of the same regiment carrying equal weight, but dressed as civilians in loose, light, open cotton clothing. I have no hesitation in saying that the latter would kill off all the former in a prolonged competition.

Soldiers then are more liable to heat apoplexy than civilians working under similar conditions, except as regards dress, simply because their dress is warmer and closer; because, in a word, it keeps in the heat of the body. And so it turns out that "the soldier argument," that was to prove that heat apoplexy is not caused by heat, goes to prove the very opposite, that it is caused by heat.

In the discussion on siriasis at the annual meeting of the British Medical Association in August 1899, Dr. Sambon altogether dropped

the "soldier argument," on which he had relied so much, no doubt, in consequence of having read my June article, though he does not say so.

It is argued that if heat apoplexy were due to heat, it would be most frequent where the thermometer is highest. We know that such is not always the case. There may be a number of cases at a place where the air is at 100° and none where it is at 115° . This seems to settle the point. Only it seems to be forgotten that our power to endure heat depends in a very great degree on the existence of winds and on the amount of moisture in the atmosphere. A temperature of 115° in a dry air, with the wind blowing, may be more endurable than one of 100° in a still, moist atmosphere; and simply from the fact that there is a rapid evaporation of the perspiration in the former case, and there may be none in the latter.

The microbe theorists, however, think it is sufficient to give us the readings of the thermometers at the two places compared. They say nothing of the prevalence of wind, of the degree of saturation of the air, or of the warmth or coolness of the nights in the places compared. They tell us nothing of the length of exposure or of any other conditions of the people in the different places. Surely there is a great difference in the lives of people in New York and those living in the country in Arizona. In New York the houses, the dress, the health and habits of the people, the hours of work, are all unfavourable as regards endurance of heat, and the nights are hot from the closeness of the streets. People do not live in the airy verandahed houses and in the light dress adopted by those living in tropical climates, whose hours of work are in the early morning, and who live day and night under swinging fans, often in rooms cooled by air blown through wetted mats. I have had my house in Rajanpur cooled by a thermantidote down to 94° , when the shade temperature outside was 123° and living there under a swinging fan would be more endurable than in New York at 92° in the houses and clothing used there without a fan; that is, by adopting certain artificial precautions, 123° may be made as endurable as 92° . And in India one can certainly more easily bear a temperature of 110° under the shade of a tree in a dry air with a fresh breeze than 95° in the house without a fan.

No deduction can be drawn from the effects of heat in two different places, when the reading of the thermometer is the only condition recorded in the two. It is said that many places with very high temperatures have no cases of heat apoplexy, while in places with a lower temperature, there are many, and that this proves the case. On such reasoning as this, one could equally well prove that the sun is a cold body and that the heat of our world is not derived from it. Thus, if the sun were our source of heat, all places nearest the sun would have the

highest temperatures. This is not so. In Jacobabad, in Rajanpur, in many places in Scinde and the Punjab, as well as in Soudan the thermometer readings run much higher than in Madras, parts of Bengal and of Africa within the tropics, even on the days when the sun is vertical over the latter. Again, if you ascend a mountain in the tropics, even on the day when the sun is vertical over it, you may be nearer to the sun than any other spot on earth, and the temperature in the shade may be 60° and you may be walking on snow. And, if you go up in a balloon, the nearer to the sun you go, the colder it gets.

If the thermometer alone is taken into account, it proves equally well that heat apoplexy is not due to heat and that the warmth of the world is not derived from the sun. And I would not be in the least surprised if we are told that all the heat of the world is caused by microbes.

One can imagine a comparison of the effects of heat in two places by taking into account not only the reading of the thermometer, but the face of the wind and the degree of saturation of the air. One can imagine a series of equivalents taking in all the ascertainable conditions. In this way we would get what might be called the *intrinsic heat* of the place. Then, if we had such a series of equivalents, we would be able to compare the effects of heat in different places, provided we compared only people living under somewhat similar conditions. *With only the reading of the thermometer in two places to guide us, no deduction from a comparison between them is of any value.*

We are now told that you can expose a man to a high temperature, while he is undergoing hard exercise, clothed in woollen wear and belted in waterproof, and that however long the test, such treatment will not induce fever. If such is the case, then the heat regulator differs from every organ in the body and from every machine in the world, for it is the only one that will not get out of gear, when for a considerable time its action is impeded and overstrained.

Dr. Sambon boldly states that it has not been proved that exposure to excessive heat will cause pyrexia in animals. It is true that a number of able men have shown by experiment that heat will raise the temperature of animals; but he has a short way with these; he simply says that these experiments were not conducted properly, and that their conclusions are wrong. He allows that two men Naunyn and Welch (apparently favourable to his view) can conduct experiments properly, they having shown that prolonged exposure to 107° will not raise the temperature of rabbits. He apparently draws the conclusion that because rabbits can with impunity endure a heat of 107° (which is not high as temperatures go in India), therefore a *very much higher temperature* will not cause fever in men and animals.

Ewing* of Columbia University states that he has repeatedly proved that exposure to excessive heat will cause pyrexia, hyperpyrexia, convulsions and death in rabbits. He also describes the resulting pathological changes, which are as clear and distinct, and definite as "those of a burn."

When surprise is expressed at heat apoplexy occurring at a comparatively low temperature, it is often forgotten how long the exposure to tropical heat may have been. One would think that it was only a question of exposure for a single hot day. In India the soldier is for months, day and night, in the atmosphere of a Turkish bath, and the prolonged struggle with the heat must be a strain on the nerve centre which regulates the body temperature. After months of such a climate, he may have to march on a campaign. The march often begins in the evening, after the fatigues of the day and after the men have been over an hour in the sun packing the mules. After sundown the soldier puts on his uniform, which makes him sweat profusely even before starting. He then sets out on a march of perhaps 16 miles, in full service equipment, weighing about 28 lbs. After midnight you often see the men dropping asleep, while walking and reeling in the ranks, and the officers nodding on their horses. The thermometer may be 100° and the air still and muggy. It is no wonder if the soldier, in his woollen shirt and tightly belted uniform, debilitated by months of heat, set to do a long march, worn by fatigue and ready to drop from want of sleep, at last succumbs. The resisting power of the heat regulator fails or becomes exhausted and the man's temperature rises to pyrexia or hyperpyrexia.

It is something like the bursting of a boiler. If the fire is excessive, the iron of the boiler at first imperceptibly yields, and finally, if the safety valve is screwed down, it suddenly explodes.

In the case of the soldier, we cannot reduce the heat of the atmosphere, or that generated by marching; but we need not add to it by woollen clothing, and, at any rate, we can give him a chance, *by opening the safety valve*, by giving him a rational dress which will allow the air to circulate around his body and keep it from being overheated.

In India a man with coma and hyperpyrexia, after exposure to a high temperature, is said to suffer from sun-stroke, if the exposure has been in the sun, and from heat apoplexy, if the exposure has not been in the sun. It is the same disease and should be called by the same name. There are often convulsions as well as coma and hyperpyrexia. Perhaps it would be as well if the terms heat apoplexy, sunstroke and heat-

stroke were abolished altogether and thermic fever used to denote either pyrexia or hyperpyrexia due to heat.

I believe that a great deal of the fever, originating in the non-malarial season in India, is due to heat and that it would be shown in the statistics as thermic fever by many medical men, if there were such a heading in the official nomenclature. It may be observed that in the army there are more than twice as many cases of simple continued fever returned in the six hot months as in the six cold. I think I might also mention here that more than two-thirds of the cases of typhoid occur in the six hot months, so that it looks as if heat may have something to do with the causation of this disease in India.

It is said that syncope without a rise of temperature, after exposure to the sun, is put down by some men as sunstroke; such cases would not be returned as sunstroke in the Service in India.

The controversy as to the cause of heat apoplexy might be left where it stands were it not for the great practical importance of the subject. Every year there are about 240 cases and sixty deaths from heat apoplexy among soldiers in India. It becomes, therefore, a duty to oppose to the theory that the disease is not due to heat, when it is practically refuted by experiments on animals, and is unsupported by a single logical argument, for such a theory is calculated to do a great deal of harm, by diverting attention from the means by which the disease may, to a great extent, be prevented in the Army, and by which many lives may be saved.

CASES OF CEREBRO-SPINAL FEVER.

By W. J. BUCHANAN, B.A., M.B., Dipl. State Med.,
MAJOR, I.M.S.,

Superintendent, Central Jail, Bhagalpur.

THE notes of the following cases of cerebro-spinal fever are here published on account of the comparative rarity of the disease, and because by the kindness of Major F. J. Drury, I.M.S., Professor of Pathology, Medical College, Calcutta, my finding of the *diplococcus intracellularis* has been confirmed as will be seen below. The cases are also interesting because of the use made of the operation of lumbar puncture for purposes of diagnosis and treatment, and because they demonstrated clearly the great diagnostic value of the phenomenon known as "Kernig's symptom." The first case occurred on 21st August 1899, the second, on 20th September 1899; the third, on 15th October.

There had been 17 cases of this disease in this otherwise very healthy jail in 1897 and 1898, five of which were fatal in the first quarter

* Epitome of Current Medical Literature in the British Medical Journal of the 1st July 1899.

of 1898. Since 17th April 1898 no such cases had been met with. The first case had been over two months in jail, and had been employed as a cook in the general cook-house; the second case came from No. 5 workshed, where he had been employed on *newar*-making. No possible connection could be traced between any of the cases. They slept and worked in quite separate wards. Moreover, and this is interesting as bearing upon the question of contagion, the three prisoners who attended upon two of the cases have been specially kept in isolation for two weeks, and though more than two months have elapsed none of them have been attacked. Though cases of this disease have been met with frequently in this jail, no possible evidence of contagion or communicability has ever been made out.*

CASE I.—Prisoner No. 654, Keudal Singh, aged 32, employed as a cook, over two months in jail, was admitted to hospital on the morning of 21st August 1899 with fever (102° F). Patient very rapidly became unconscious, and passed thin stools involuntarily into his bed. Pupils contracted, pulse 90 only. At 5 p.m. still unconscious, pupils as before, conjunctivæ much injected. During the day there were intervals of consciousness when he groaned much and complained of great pain in upper part of spine, neck and from the forehead back above the ears. Evening temperature 101° F. Next morning (2nd day) unconscious, cannot answer questions, is very restless, rolls from side to side on the bed, twitching of the facial muscles, much groaning, holds his neck with his hands at times as if to ease the agony. Restlessness sometimes continues for an hour or more, then he becomes more quiet and lies on his side with his legs drawn up exactly resembling the pictures of meningitis cases given in Allbutt's system (vol vii, pp. 524 and 527). At 4 p.m., temperature 101° F., pulse 120, the morning pulse was 120 with a temperature of only 99·6° F. (This want of relation between temperature and pulse is one characteristic of this disease).† The tongue was coated, urine was passed. In the evening though the temperature was higher, yet the patient was more conscious and able to reply to questions, and complained much of great pain in head and neck. There were no lung symptoms. (3rd day) Patient somewhat conscious, lay quiet with flexor spasm of lower limbs, head markedly drawn back, mouth half open, pupils contracted but reacted to light, no paralysis yet, no strabismus. On this day Kernig's symptom (*v. below*) was very clearly and distinctly demonstrated to the medical subordinates. The urine was examined, sp. gr. 1030, trace of phosphates but no albumen, no sugar. (4th day) Tongue much coated, constipation (which followed the involuntary loose stools of the first day), much groaning, marked stiffness of the sterno-mastoid muscles, and marked retraction of the neck. Urine to-day retained. Pupils small, eyes much injected, patient lies on his side with legs drawn up and head well thrown back. At 11 o'clock when seen again there was deviation inwards of left eyeball, with facial nerve paralysis of right side. Patient now speaks with difficulty, and with a lisp, he says "*fani fio*" instead of "*pani pio*". This was first noted by his sick-attendant. There is also pain and swelling of right knee-joint. There is much twitching of the face muscles on the non-paralysed side. No lung symptoms nor any physical signs of pneumonia. At this time I did lumbar puncture

between the third and fourth lumbar vertebrae, a few drops of turbid fluid were withdrawn through the fine *aspirateur*-needle. This was received into a sterilised test tube for microscopic examination. No appreciable good effect followed the spinal puncture in this case.

The same evening when seen at 7 p.m., he was totally unconscious, herpes labialis had appeared on both lips and retention of urine continued. During the night he is described as lying unconscious, occasionally rolling from side to side, and uttering groans of pain. The medical subordinate noted that during the night the breathing became like "Cheyne-Stokes respiration." The patient died at 2 a.m. on the morning of fifth day of the illness. The last temperature taken at 9 p.m. was 104° in the axilla, pulse 130, small and feeble.

Post-mortem examination after 5 hours.—Body well nourished, no inflammation or pneumonia of the lungs. Liver, spleen and kidneys appeared healthy. Brain surface congested and covered with a fine film of leptomeningitis. The base of the brain, cerebellum, medulla* and upper four inches of spinal cord (all that was examined) were covered with a thick flaky greenish purulent layer of lymph, which seemed to surround the roots of all the cranial nerves. The lateral ventricles were full of turbid fluid, and similar fluid in considerable quantity was poured out from spinal canal. The intestines were perfectly healthy and were not ulcerated. The affected knee-joint contained much synovial fluid but was not suppurated. There was no otorrhœa, ear disease or other source of septic infection.

Bacteriological examination.—The turbid fluid withdrawn by lumbar puncture was at once examined, and diplococci free and in the pus cells discovered. At the autopsy specimens of the cerebro-spinal fluid and the flaky lymph were taken, part examined at once and part sealed, and sent to the Professor of Pathology at the Medical College, Calcutta. Major F. J. Drury, M.B., I.M.S., kindly reported as follows:—"The fluid in both tubes contained numbers of diplococci in almost pure cultivation, many were within the pus cells, but mostly they were free, many of the pus cells having disintegrated. I am satisfied that they were really diplococci. I inoculated two agar tubes from each specimen, and next day a copious growth apparently pure had taken place. I made a smear preparation from a culture and found both diplococci and moncocci."

CASE II.—No. 743, Luchmi Pahari, aged 22 years, employed on *newar*-making in No. 5 work-shed, slept in No. 5 barrack. Previous history, in jail several months, no previous admission to jail hospital. Came to hospital at 9 a.m. on 20th September 1899, had been at work up to 5 p.m. the previous evening. Complained of stiffness and pain over forehead and back of neck. Tongue coated, pupils contracted, very small, do not react to light. Sterno-mastoid very stiff and painful. Eyes injected. Pain in lumbar region. No squint. Is very restless, rolling from side to side. Kernig's symptoms very clearly noted and contrasted with healthy men. Constipation was present. Treatment as follows:—Calomel at once. Iodide of potash in twenty grain doses three times daily. Ice bags and hypodermics of morphine for the pain. Evening temperature 101·6° F.; pulse only 80. Passed urine; vomited several times during the day. (2nd day) Urine no albumen, no sugar, sp. gr. 1020, much phosphates. Much groaning. Temperature 102°; pulse 90. Patient very restless. Evening temperature 101°; pulse 100. (3rd day) Slept towards morning. Temperature 100°; pulse 75. Is conscious, pupils contracted, complains of great pain in neck. Pulse slow and small. Retraction of head less marked. In the evening he passed a frothy liquid stool, vomiting increased. Complains chiefly of

* Vide Dr. J. Moorhead's article on Cerebro-Spinal Fever in *Transactions of Indian Medical Congress of 1894*. His cases were all met with in Bhagalpur and Hazaribagh Central Jails.

† Vide A. H. Wentworth's article on the disease, *Lancet*, 1st October 1898, p. 854.

* The appearance of the brain exactly resembled Plate III of meningitis given by Lees and Barlow. Allbutt, Vol. VII, p. 496.

pain in loins and neck. Temperature at 6 P.M. 103° 6'; pulse 98. Iodides continued. Ice morphia. Milk and sago diet. Rum 4 oz. At 11 A.M. passed thin blood-stained watery stool. Temperature 101.2°. Urine passed. No retraction of the head now, also pain less than in morning, a distinct improvement. Kernig's symptom, however, was present. Temperature at 6 P.M.; 103°; pulse 110. Lumbar puncture done at 6 P.M., 2 drachms of fluid removed. (4th day) Patient apparently better, pain in head and neck certainly less. Morning temperature 103°; pulse intermitting and slow 80. Patient was distinctly better all this day. (4th) Sputum slightly frothy like the bronchitis cases now in hospital. No pneumonia. (5th day) Condition improved, apparently no pain in neck or head. Pulse rapid 140 and small. Temperature 101.4°. Passed thin soft stool. (6th day) Was delirious at night, slept badly. Morning temperature 102° F. Head much retracted, delirious. Pain evidently very severe. Pulse small and compressible, no paralysis. Retention of urine. (7th day) Temperature 99°; pulse 118. Conscious, less pain, pulse rapid and small, is better than yesterday. Iodides continued. Next day (8th day) patient was worse. Temperature 99°; pulse 125. Pain in neck worse, stiffness of sterno-mastoids increased. Evening temperature 100°; pulse 170, small and very rapid; is delirious. (9th day) Temperature is subnormal 97°, but all symptoms were worse; pulse 172, small and feeble. This condition got worse, he passed into a totally unconscious state, with slow jerky respirations and imperceptible pulse, till he died at 1 A.M. on 1st October 1899.

Post-mortem examination after 6 hours.—Lungs, patch of central pneumonia, size of fist in left lung, right lung healthy. Brain and spinal cord, on stripping of the dura-mater, patches of greenish flaky lymph were seen on some of the convolutions behind the fissure of Rolando on right side. The under surface of the brain posteriorly, the medulla and upper few inches of spinal cord were thickly covered with yellow-green flaky purulent lymph. The spinal canal was full of turbid fluid which poured out in considerable quantity. The same kind of greenish lymph covered the cord as far as examined. Cultivation were made from spinal fluid, and white dotted colonies of microbes were grown in 24 hours on agar very similar to those pictured in Councilman's monograph. The diplococci were also found by microscopic examination in numerous pus cells from brain lymph and cord. Other viscera normal. A mixed impure culture was grown on agar from secretion from the left nostril.

CASE III.—No. 820, Tillakhari Gwala, aged 28, a convict watchman, in jail over three years, no possible connection could be made out between this case and the former two. He slept and worked in an entirely different part of the jail. He was admitted to hospital at 11 A.M. on October 15th, 1899, and died the same evening at 6 P.M. His temperature on admission was 99°, when I first saw him at 2 P.M. the temperature was 104°. Pulse was so small that it could not be felt at the wrist, but the carotid pulse was 150. The tongue was furred down the centre with red edges. He complained of great pain in the head and back of neck and of great thirst. He had passed one liquid stool, healthy but loose. There were shooting pains in arms and legs which made the muscles start and jump, and which were relieved by massage. He distinctly said that when he got up in the morning he was 'blind,' but could see when he was carried to hospital. He was extremely restless, had passed urine. The respiration very gasping. Sputum frothy. No pneumonia. At 5 P.M. when seen again the temperature was 105°, the head was drawn back. Kernig's symptom was present when first examined, and aided in the diagnosis, he rapidly became unconscious and died at 6 P.M. after about 9 hours' illness.

Post-mortem next morning after 12 hours. Body fat and well nourished. The pericardium contained about ½ oz. of fluid; both ventricles contained yellow clots. The lungs were intensely engorged and cedematous; there

was no solidification; the kidneys were healthy and surrounded by layers of yellow fat, the spleen was somewhat enlarged (1½ times), and fibrous, evidently an old malarial spleen (though he had had no attacks of malaria for over a year). The small intestine was quite healthy and contained soft faecal matter only. The large intestine showed distinct marks of old partly-healed up ulceration of dysentery, though he had not an attack of dysentery for just 15 months (July 1898). The brain was completely covered with fine grey cloudy lepto-meningitis; this was thicker and more advanced along the posterior base and round the medulla and upper portion of cord. Turbid fluid was obtained from the lateral ventricles and from spinal canal. The brain and cord evidently showed the commencing stage of the meningitis. The patient having died in a few hours' illness, there was not time for purulent lymph formation. This is an example of the fulminant type of cerebro-spinal fever which is by no means uncommon.

Bacteriological examination on agar showed numerous white spots or colonies strongly resembling the plate given in Councilman's monograph. I could not obtain in time blood serum.

The above three cases illustrate different types of this strange and fatal disease. The chief points of interest, as said above, are (1) the confirmation of my finding the *diplococcus intracellularis* (described by Weischelbaum) by the Professor of Pathology. In a paper* read before the British Medical Association in 1898, I described a case in which I had found the diplococcus, but it was not till the above case was met with that I had an opportunity of having this confirmed by expert testimony. I had also arranged to have the next case examined by Captain Leonard Rogers, I.M.S., but the patient died the very day I heard of the fire in the Imperial Laboratory at Muktesar. Another interesting feature of these cases is the use of lumbar puncture. This little operation is not difficult to do, though like other things one does it the better for practice, if one withdraws turbid fluid, it is a proof of the existence of meningitis, and moreover microscopic examination of the fluid may enable one to find the diplococcus, and settle the diagnosis at once. In the second case, temporary benefit seemed to follow the use of lumbar puncture, but the improvement was illusory, or indeed might perhaps be attributed to the use of the iodides. These three cases moreover also illustrate the extreme value of Kernig's symptom as an aid in diagnosis. In all the symptom was present in a marked degree, and enabled me to confidently make the diagnosis at an early stage of the cases, and stick to it in one case in spite of the temporary improvement in the other symptoms. As this symptom has not yet found its way into the text-books, not even into Allbutt's system, it is worth while to describe it here. It was first described by Kernig, of St. Petersburg, in 1882, but only recently has his description been taken notice of. Netter (the author of the mono-

* Vide *British Medical Journal*, 24th September 1898; *Lancet*, August 6th, 1898; *Journal of Tropical Medicine*, vol. i, No. 1.

graph on Cerebro-Spinal Fever in the "Twentieth Century Practice of Medicine") thus describes the symptom (*Semaine Medicale*, June 29th, 1899). The patient is placed in dorsal decubitus and his legs fully extended. When the patient is raised to the sitting posture, it is found that the knees are more or less flexed, and despite all efforts cannot be completely extended on account of the contracture of the posterior muscles of the thighs. In some cases the angle thus made is 90°; in no case of meningitis has it been found more than 130° or 140°. Complete extension becomes possible when the patient is put on his back again. According to Netter this sign has been found complete in 45 out of 50 cases, and has not been found in any other acute condition. Netter believes that the presence of this sign confirms the diagnosis of meningitis when other symptoms are obscure, and suggests a latent meningitis when it is the only symptom present. I have found it a very early symptom in the above cases, in all it was present on the very first day of illness, and remained present in spite of the improvement in other symptoms. It is so simple that it is well worth remembering. To test its absence in healthy persons and in persons suffering from other diseases, I examined ten healthy men and found it absent, and in ten other cases suffering from broncho-pneumonia, dysentery and malarial fever, and it was absent in all.

The origin of cerebro-spinal fever in Bengal jails, as elsewhere, remains much of a mystery, it appears to cling to places in which one case has occurred, but cases only appear at irregular intervals, and I have never been able to trace the faintest connection between cases in the same or from previous epidemics. In a recent article (*Deut. Medicinische Wochenschrift*, July 20th, 1899) H. Jaeger gives it as his opinion that in Europe (and America) there is now an "epidemic period" of this disease. Accepting the assumption of an epidemic period, the peculiar resisting vitality of the diplococcus, its widespread dissemination (it is very common all over the States and in Germany, France and Greece) with the evidently slight disposition of human beings for the infection—manifested in the comparative smallness of all epidemics—would easily explain the epidemic and sporadic character of the cases. Jaeger from a study of the disease in the German Army shows that all the so-called sporadic cases radiate from a centre of infection, and that a sporadic case may start a new centre even after long periods of latency in dry dust—it is "the most resistant of all organisms."* The cases given above have much in common with the "simple" meningitis described by Lees and Barlow. In nearly all the cases I have met the inflammation was found at the posterior part of

the base of the brain "in the region where the brain and spinal cord unite, where the cerebellum overlaps the medulla oblongata" (Allbutt, vol. vii, p. 493). The characteristic symptom, "retraction of the head," is most marked in posterior basic cases. In two of the above cases a catarrh, in one case intestinal, shown in the preliminary diarrhoea, and another bronchial shown in the frothy sputum accompanied the cases, but in none of the cases in the present outbreak did pneumonia occur except the patch of central pneumonia in second case. This catarrh is also noted by Lees and Barlow in children's meningitis. Terminal hyperpyrexia may occur in some cases, in others, as No. 2 above, the temperature may be subnormal some time before death. It is somewhat strange that more cases of this disease have not been noted; it must certainly be met with occasionally among the general population but except in America cases have usually been reported among soldiers in barracks and prisoners in jails. The term "cerebro-spinal fever" seems preferable to that of "cerebro-spinal meningitis," the name generally used by German and American writers, and is in accordance with the Nomenclature of disease.

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THE TECHNIQUE OF SERUM DIAGNOSIS— AN EASY METHOD FOR USE IN INDIA.

By WM. GLEN LISTON, M.B., I.M.S.,

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I HAVE often spoken to friends in this country about serum diagnosis and have been surprised to learn that many of them were under the impression that the difficulties of serum diagnosis were so great that this aid to the diagnosis of the fevers of this country could only be accomplished in a laboratory. Thanks to the ingenious work of Professor Wright, we are now able to do serum diagnosis even in the most up-country station where the test practically "performs itself" without labour or watching. I shall endeavour, therefore, to explain as clearly as possible the method I have used in this country as taught me by Dr. Wright.

* *Inde Sanitary Commissioners' (India) Report for 1897*, p. 23.

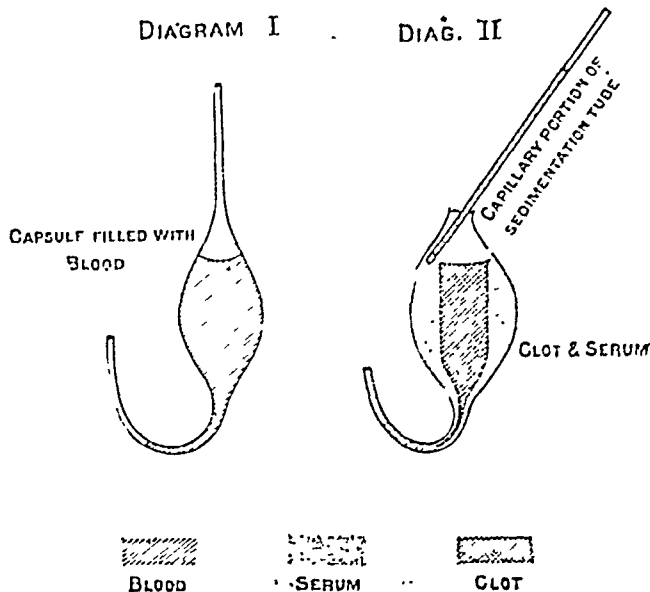
α in Fig. IIIB and drawn out into form in Fig. IVB. A little rubber cap is placed over the end of the tube and the sedimentation tube with mixing chamber is ready for use. Several of such tubes should be prepared; the india-rubber cap may be transferred from the one to the other as required for use. An india-rubber cap can be easily made with a piece of ordinary drainage tubing, one end being tightly encircled with a piece of string.

Some normal saline solution is now made up and placed in one of the watch glasses. The typhoid emulsion is also got ready. It is prepared by very carefully removing with a little salt solution a young 24 hours' growth from agar of the bacillus of the disease it is intended to examine, due precaution having previously been taken to secure a true and pure growth of the microbe. Great care has to be exercised to avoid getting clumps of microbes or bits of agar in the emulsion. The emulsion must not be too opaque, but when diluted with an equal bulk of plain salt solution should only have a faint opalescent appearance. It is not necessary that the microbes should be alive: they may be killed at a heat not exceeding 60°C . Such an emulsion carefully prepared is sent out by Professor Wright to all who apply for it for the purpose of carrying out serum diagnosis in cases of typhoid and Malta fever. It is supplied in bottles covered with an india-rubber cap; a little melted paraffine is placed on the cap and neck of the bottle. Care has to be taken to maintain this emulsion as aseptic as possible, and from obtaining fluid from it, the following procedure should be adopted. Two sedimentation tubes are prepared one like Fig. IIIB and the other like Fig. IVB. A little cotton-wool may be placed in the larger end of the first-mentioned tube. The points of these sedimentation tubes having been broken off with a pair of dissecting forceps or scissors made sterile in the flame, the capillary tubes are also sterilized by passing them slowly once or twice through the flame. The neck and cap of the bottle containing the diagnostic emulsion is either inserted into some hot antiseptic solution or the paraffine gently melted over the spirit lamp flame. Sedimentation tube No. 1 is then inserted through the india-rubber cap, avoiding touching the liquid; after that No. 2 is in like manner inserted, but it is passed into the fluid, the india-rubber cap having previously been pressed; it is now relaxed and the emulsion fills the mixing chamber of the sedimentation tube. It is then withdrawn and its contents placed in a watch glass. If more emulsion is required, the tube may be re-inserted. Both tubes are finally withdrawn and the cap of the bottle dipped in some melted paraffine.

The serum will have separated from the clot in the capsule after a few hours. The limbs a and b are cut off with scissors or broken off.

A sedimentation tube, such as shown in Fig. IV B after the end is broken off, is marked with a glass pencil or ink about 2 inches from the point of the capillary tube. The capacity of the capillary tube from the point to this mark is taken as one measure.

The india-rubber cap of the sedimentation tube is gently pressed, and the capillary tube is inserted into the serum, taking care to disturb the clot as little as possible. See Diagram II.



By relaxing the pressure on the india-rubber cap, serum is drawn into the capillary tube up to the mark, or in other words one measure of serum is taken. See Diagram III.

We now proceed to dilute this serum. Having allowed the serum to pass up the capillary tube about $\frac{1}{2}$ inch from the point, the tube is then inserted into the saline solution; a bubble of air is thus caught between the serum and the salt solution. The salt solution is then allowed to flow up the tube to the mark previously made.

We have thus now two exactly equal measures one of serum and one of salt solution separated by an air bubble. See Diagram IV. This second measure is allowed to pass up the tube $\frac{1}{2}$ of an inch and again it is inserted into the salt solution; another bubble is thus enclosed. Another measure of salt solution is taken, another air bubble again enclosed, and another measure taken of the salt solution. This is repeated till four measures of salt solution and one of serum is obtained. The whole is then allowed to pass into the mixing chamber (each air bubble as it enters the mixing chamber is allowed to burst), where by alternately pressing and relaxing the india-rubber cap the fluid is sent down the capillary tube and drawn back into the mixing chamber and so becomes thoroughly mixed. The fluid in the mixing chamber now consists of a 1 in 5 dilution of serum. See Diagram V.

This may be now squeezed out into a watch glass. The capillary tube is again filled with this fluid (*i.e.*, 1 in 5 serum) for one measure. An air bubble is enclosed and a measure of typhoid or Malta fever emulsion is taken up. *See* Diagram VI. The whole is then passed to the mixing chamber and thoroughly mixed as before. We have thus now in the mixing chamber a dilution of serum 1 in 10 parts, *see* Diagram VII. This mixture is then pressed down the tube almost to the point, and the point is sealed

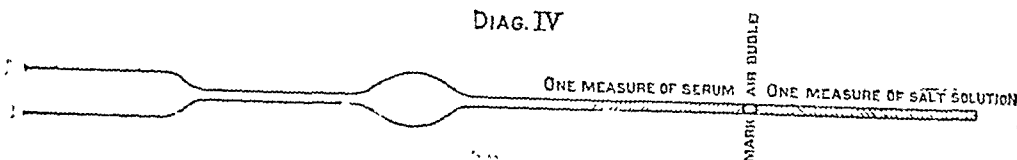
Another sedimentation tube having been taken and a measure marked thereon; into it is then drawn one measure of 1 in 5 serum, then one measure of salt solution as before, followed by two measures of the diagnostic emulsion, and the whole mixed. We thus get in the mixing chamber—

1 measure 1 in 5 serum + 1 measure salt solution + 2 measures emulsion = a serum dilution of 1 in 20, and half of the mixture being diagnostic emulsion, that is, the emulsion is of the same strength as in the previous tube.

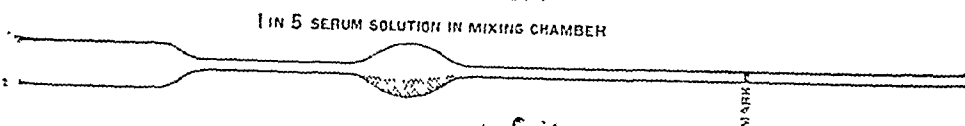
DIAG. III



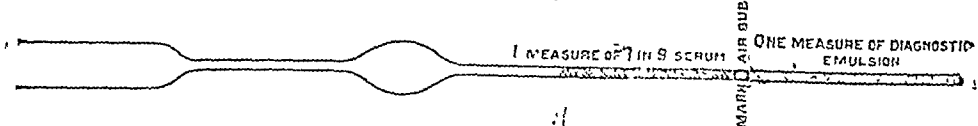
DIAG. IV



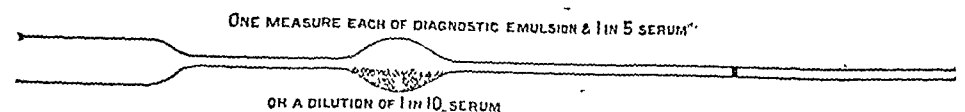
DIAG. V



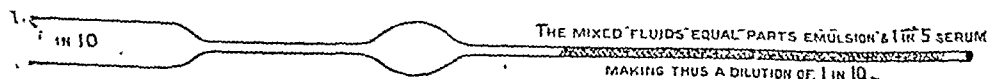
DIAG. VI



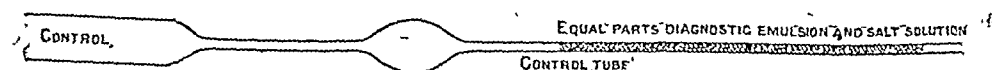
DIAG. VII



DIAG. VIII



DIAG. IX



in the blow pipe flame. *See* Diagram VIII. If it is possible to carry out the microscopic method, a drop of this emulsion should be placed on a clean cover-glass before sealing up. The cover-glass is then inverted on a slide and rinsed with vaseline to prevent evaporation. This is then kept for examination under the $\frac{1}{8}$ inch lens of the microscope. After the sedimentation tube has been sealed, the india-rubber cap is removed, and the tube is marked 1 in 10 and placed vertically point down in a test tube.

A microscopical specimen may be prepared of this fluid also, and the tube is afterwards sealed and marked 1 in 20, and placed beside the other tube. Other dilutions may be carried out—1 in 40, 1 in 80, 1 in 500, &c. Thus 1 in 40 may be made by taking one measure of 1 in 5 serum, three measures of salt and four measures of diagnostic emulsion. It is important to notice that care has always to be taken to keep the dilution of the diagnostic emulsion constant, that is, 1 part in 2, while the dilution of the serum varies.

The amount of dilution of the serum is always marked on each tube. It is generally useful in the first instance to prepare dilutions of 1 in 10, 1 in 20, 1 in 80. If the reaction is well marked in this latter dilution, higher dilutions may be prepared.

Now we come to a very important part, *viz.*, the preparation of the control tube.

No case should be tested without using a control tube.

The control tube is prepared by taking one measure, each of normal saline solution and diagnostic emulsion. See Diagram IX. A microscopical specimen should also be prepared as described before, the end of the tube may then be sealed, and the tube marked control.

Meanwhile some idea may be obtained of whether the reaction is going to come off or not by examining the microscopical slides. The control slide should first be examined.

The microbes should be seen evenly spread throughout the field with no clumps; if dead, they show a slight meibomian movement, but if alive are actively motile.

The dilution of 1 in 10 should next be examined, and it should not have been allowed to stand for more than half an hour. If a reaction is going to take place, the bacilli will be seen in the first instance to form agglutinative centres, the microbes tending more or less to collect into groups, although the individuals are for the most part separate from one another. Later, or if the reaction is more marked, the microbes will have already collected into clumps, their motility being markedly lessened, but still a few individuals stray about.

Still later, the clumps become larger, more compact, motion is still less, if present at all; the individual shape of the microbes becomes effaced, many swollen and globular forms are now seen; very few free individuals can be found. Such an appearance constitutes a well-marked microscopical reaction. If such a reaction is seen microscopically in from 5 to 10 minutes in a dilution of 1 in 20, in quarter of an hour, signs of a microscopic reaction will be evident in the 1 in 10 sedimentation tube, especially if it be compared with the control.

The appearance first seen in a tube about to show a reaction is a peculiar flocculation of the emulsion. The floculi at first small gradually enlarge, and as they enlarge, their numbers diminish, and between each flocculus more and more clear fluid appears. Finally after several hours the floculi may have been reduced to one or two, which, as a rule, sink to the bottom of the sedimentation tube in one mass, but may, on account of the presence of small air bells or some other cause, be either adherent to the side of the capillary tube or float on the surface; a gentle tap often causes them to fall to the bottom. This appearance, should it develop in a solution of more than 1 in 20 dilution within

five hours, constitutes a well-marked reaction by the macroscopic or slow test.

In place of using serum it is interesting to note that many other body fluids may be used in cases where a well-marked reaction is present for a particular microbe, but these fluids are not nearly so trustworthy as the serum. Such fluids are the urine, blister fluid, pleuritic fluid, and some have used pus, milk, &c., &c.

There is not time or space to deal with such interesting questions as the origin and nature of this clumping reaction, or discuss the time at which the reaction first appears during an infection and the curious fact of intermittence of the reaction.

Much interesting work has been done and has still to be done in connection with vaccination reactions, and the result of infections by allied micro-organisms, especially of the coli group, including *typhosus coli communis*, *Gaertner's bacillus* and the *bacillus psittacosis* of parrots.

Many are now working at the interesting problem of how far the agglutination reaction may be taken as a measure of immunity to that particular disease, and how far the power of agglutination may be taken as a guide to prognosis during an infection. It will thus be seen that vast fields of research are open to all.

HYPNOTIC THERAPEUTICS IN NATIVES OF INDIA.

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LIEUT., I.M.S.,

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HYPNOTISM as a therapeutic agent is not so widely used as it might be in India, and though its use in England is spreading, it does not seem to spread in a corresponding degree in India.

My experiences with hypnotism in India are more limited than they were in England and Ireland; still I notice some difference in the behaviour of the native of India compared to the European as regards hypnotism.

I hypnotise a patient as follows: Placing some small bright object in his hand, and seating him with his back to the light in an armchair, I direct him to hold the object at a convenient distance from his eyes and to stare at it. I then continue in words somewhat as follows: "While staring at this object you must form in your own mind a picture of yourself going asleep at night. Imagine you see yourself lying in bed with your eyes closed trying to sleep. Whenever I say to you 'think of sleep,' then recall this idea of sleep to your mind, if your mind happens to be wandering at the time. When you have looked at the object for some time you will find your eyes becoming very tired. You will become

gradually more and more sleepy, an intense desire to close your eyes will ensue, they will close and you will be asleep." He continues to stare at the object, while I, from time to time use various suggestions bearing on his state, such as "Your eyes become tired. You notice darkness around the bright object. Your eyelids feel heavy and are gradually closing. Continue to think of sleep. You have an intense desire to be asleep. Your eyes are closing. Now they are closed. You are going asleep."

These suggestions I modify and elaborate according to the apparent condition of my patient. I keep his mind intently on sleep by frequently saying "think of sleep." Finally when his eyes close, I gently stroke his forehead and eyelids in a downward direction, and say in a more commanding voice than before "sleep," "sleep deeply" several times.

If I desire to make sure that he is asleep, I raise his hand up, and after holding it so for some seconds I let go, his hand remains up until I tell him he can lower it. This is called suggestive catalepsy. Or I dare him to open his eyes telling him it is impossible for him to do so, and though he is evidently struggling hard, he cannot open his eyes. Or I flex his elbow and maintain it in the flexed condition for several seconds, and say, "you are unable to straighten out your elbow," he cannot do so. This is suggestive contracture. When these signs or any one of them are present, I know my patient is under the influence of hypnotism. Still all these signs may be absent, and the only indication may be that on saying, "Try to open your eyes you cannot," he does so, with some little difficulty, and complains only of a little drowsiness. This is the first degree or stage of somnolence of Liébault.

In the second degree, the patient cannot open his eyes, and suggestive catalepsy can be induced.

In the third degree, drowsiness is more pronounced, tactile sensibility is diminished or lost.

The fourth degree is characterized in addition by loss of relation with the outer world. The patient's senses are only in communication with the operator. He hears only what the operator says. On waking he remembers all that occurred while he was asleep.

In the fifth and sixth degrees or the degrees of somnambulism, the patient on waking forgets all that happened while he was asleep.

These latter degrees are perhaps the most potent for therapeutic purposes, and in my experience so far, are the degrees mostly met with in the natives of India. But I would add that these deep degrees of hypnotism do not always mean greater therapeutic value, and *vice versa*.

Waking a patient is simple. I blow on his eyes and say, "wake up;" he is awake at once.

Hypnotic suggestion for therapeutic purposes is applied as follows: A patient having, say a headache, is hypnotised. I place my hand on

his head and say, "Your headache will soon disappear, it is now going, it is nearly gone, now it is gone." If asked, he will probably say he has still a little pain; I say "very well, what remains of the pain will soon go, it is now going, it is gone." Probably by this time the pain has gone, but if not, I again repeat the process. Any other form of pain is cured or relieved in the same manner, which is particularly effective for pains of a functional character, such as some sciaticas, lumbago, and neuralgia.

Using much the same suggestions a functional paralysis is cured, or a vicious habit stopped, some forms of vomiting stopped or a functional anaesthesia cured.

Likewise by using appropriate phrases insomnia is cured, an appetite is induced, evacuation of the bowels at certain hours insured, and even menstruation re-established where it has been suppressed. In cases of constipation a certain hour in the day is named at which the feeling of wanting to go to stool will be felt; and in suppressed menstruation a day in the month as near as possible to the patient's usual time for menstruation is named as the one on which menstruation will begin.

Some patients sleep too much and at all times when they are being subjected to hypnotism, and some have a headache on waking, but all those troubles can be counteracted by suggestion.

The following are a few cases selected at random from my notes:—

CASE I.—Gunner Kishen Singh, I. K. M. Battery, was admitted to hospital on the 7th of July 1899 for deafness of the left ear and blindness of the left eye. The left eye had a slight external strabismus of which he was ignorant. The pupils were equal and normal. Fundus oculi normal. The external ear was closed by a large lump of wax, but on dislodging this by syringing the hearing was only slightly better. Believing there was nothing organic in the case and making sure he was not shamming, I hypnotised him on the 11th of July 1899. I used the usual suggestions, and made him see perfectly with the left eye and hear with the left ear. On waking he was ignorant of what had occurred while he slept. I tested his sight and hearing again and found them normal to his own evident pleasure. Next day on seeing me he said his eye was all right, but he had become a little deaf again, so I hypnotised him and gave suggestions as before. Next day there had been no recurrence of deafness; and eyesight remained normal. I continued to hypnotise him every day for a few days, then every second day, and finally discharged him on the 20th July 1899. He has had no recurrence.

CASE II.—A Pathan border policeman, named Meeruk, was addicted to the opium habit and wished to be cured of it. He was most unhappy about his condition. He spent a good deal

of his pay on opium, of which he took twelve to fifteen grains a day, and at times when his supply gave out, and opium was difficult to procure (which he said was often), he suffered very much. His appearance was typical and his pupils were contracted. He weighed 7st. 9lbs.

I hypnotised him and made suggestions for his lessening the quantity of opium by one half daily, and stopping it entirely in five days' time. I told him he would gain an intense disgust for the taste, smell and even sight and touch of opium, and that it was an unclean substance that would make him unclean by eating it.

I gave him suggestions against the ill-effects likely to occur by stopping opium such as pain, depression, sleeplessness, etc., and suggested he would go asleep early at night, and would sleep most of the day when he had no work to do.

This reminds me of a method of cure for the drug habit described in a recent issue of the *British Medical Journal* by a Singapore practitioner, who keeps his patients in a state of narcosis by bromide of soda for several days.

I hypnotised him every day from the 12th June 1898 until the 30th June. Then every second day during the month of July; twice a week during August, once a week during September and October, and a few times in November.

During the whole of this time he took no opium, and on the 30th November when he went to Tirah on three months' leave, he was ten pounds heavier than at the beginning of the treatment, and was looking ever so much brighter and happier.

Early in January 1899, while in Tirah, he got acute dysentery, and was treated by a *hakim* there.

The latter tried to get him to take opium and threatened, when the patient refused, that he would die. He could not be prevailed on to take the opium.

On his recovery he found he could not do without opium, and then heard that during the latter part of his treatment, the *hakim* had been giving him opium in a disguised form. When I saw him in March 1899 the habit was fully re-established.

The result was disappointing, but the circumstances under which re-establishment of the habit occurred were exceptional and could not be foreseen.

Still the case is instructive, and I may fairly ask what other therapeutic measure would have given such a result?

Another point of interest in the case is the peculiar method I had to adopt to hypnotise him. He could only speak Pushtu. I could only speak English at the time. As I could not procure a Pushtu speaking officer to help me though I had the help of one who spoke Urdu, I gave my suggestions in English to the officer; he spoke them in Urdu to another police sepoy who spoke Pushtu to my patient. I was fre-

quently conscious that my suggestions were being mutilated, still at the first séance the patient went into deep somnambulism in a short time. Under these extraordinary circumstances the result was remarkable.

CASE III.—A syce, hearing that I was breaking the above-mentioned police sepoy off the opium habit, came to me for similar treatment on the 20th July 1898 when I hypnotised him. I treated him in every respect similarly to the above case. He took altogether about eight or ten grains of crude opium a day. He slept so much day and night as a result of my suggestions, that his master complained that he was neglecting his work, consequently I made him sleepless.

I last saw him at the end of March 1899 when he was leaving the station. He was not then taking opium, and had not taken any since the beginning of the treatment. I am making enquiries as to whether he is now taking opium and will publish the result. In this case I stopped hypnotic treatment on 12th November 1898, and although he was not hypnotised from that date to the end of March 1899, he did not resume the opium habit.

One day I shewed this case to a senior officer of the Indian Medical Service who was an unbeliever in hypnotism. He asked me for a proof that the man was hypnotised, so I induced absolute anaesthesia of the skin of the hand by suggestion. Pins were stuck in the skin and even through it, and the hand was beaten and pinched, but the patient was unconscious of pain. My friend who was still doubtful, seized the back of the patient's hand, and pinched and screwed the skin so badly that a piece came away in his hand! But the patient did not feel pain, and on waking him he explained the wound as being caused by the bite of a horse.

My friend was convinced that there was something in hypnotism.

Such a case would be suitable for a minor operation without an anaesthetic. I recently used hypnotism instead of an anaesthetic while stretching the sciatic nerve by the dry method, namely, by flexing the thigh strongly on the abdomen, the knee meanwhile being held rigidly extended.

The patient, though a fat Babu, did not feel pain, and the treatment gave great relief.

CASE IV.—A Hindu Bunnia, came a long journey for hypnotic treatment with symptoms and signs of typical gastralgia of over three years' duration. I was careful to exclude every possible cause for the severe pain from which he suffered, and which recurred almost every evening about 6 o'clock. Gastric ulcer, duodenal ulcer, hepatic and intestinal colic, cardiac disease, etc., were excluded one after another.

He had been much treated by drugs in various parts of India, and the skin of the stomach was much marked by blistering, burn-

ing with hot irons, etc. I first hypnotised him on the 12th July 1899, and gave the usual suggestions. Like all my other cases in natives, he went into the degree of deep somnambulism. The pain recurred for the three following days though gradually lessening. From the fifth day of treatment the pains absolutely disappeared.

I last saw him on 31st August, and when I hypnotised him I suggested that if ever the pain recurred, he must return to me at once for treatment. This is a suggestion I frequently give natives to insure continuous treatment, and I can fully recommend it to hypnotists. It is necessary because natives are so liable to get tired of prolonged treatment, and to give up treatment on a slight recurrence of the symptoms. This patient has not returned, so I conclude that his pain has not recurred.

In this case I also used another method of continuous treatment by suggestion that may perhaps appear to many to smack of charlatanism; but which I defend because of its utility. Before the patient went away I marked a piece of paper with a meaningless drawing. One day when he was hypnotised I told him that he must apply this paper to his stomach each evening about 5 o'clock before the pain was due; at first, continuously for two months and then intermittently for two months more, after he went back to his village. I told him this would absolutely prevent the return of the pain; and from my own experience I believed it would do so. This man had acquired a habit of pain, which like all bad habits could not be broken off in a few weeks, and being conscious of this, I adopted the above methods of securing prolonged treatment by suggestion for some months.

In conclusion, I will briefly discuss the natives susceptibility to hypnotisms and suggestion. From my experience, so far I believe the native lends himself better than the European to treatment by hypnotism. He is more easily hypnotised, more readily reacts to suggestions given him to the hypnotic state, and this chiefly because he goes into a deeper degree of hypnotic sleep. His general up-bringing and surroundings have saturated him with superstition, while the tenets of his religion lean very much that way. For these reasons he is highly imaginative and credulous, and readily obeys a suggestion, especially under the influence of a Sahib. Besides he is less analytical than the European who tries to analyse his condition as he is being hypnotised, and thereby infringes the first principal necessary for success, viz., to think of nothing but sleep. This of course is due to the greater enlightenment and mental activity of the average European as against the average uneducated native amongst whom I have had my experience.

ENTERIC FEVER IN NATIVES OF INDIA.

By ANDREW BUCHANAN, M.A., M.D.,

MAJOR, I.M.S.,

Superintendent, Central Jail, Nagpur, C. B.

(Continued from page 404.)

13th day—Stool thin, uniform in consistence, resembles pea soup. 14th and 15th, two stools like pea soup, with white particles adhering to the bottom of the vessel.

In B. the bowels were loose on the 4th and 5th day. From the 7th to the 14th day the stools were passed unconsciously.

In C. there was constipation for a few days. On the 7th the bowels were open twice. On 12th stool thin with whitish deposit.

In D. on the 6th and 7th days two stools, on the 11th day two stools.

In E. one thin yellowish stool on the 5th day.

From this it will be seen that diarrhoea was not at all a marked symptom.

The characteristic pea soup stools were not seen for more than a few days in any of the cases. The white curdy particles adhering to the bottom of the vessels were seen in all cases. These particles are commonly seen in cases of enteric fever. Whipham, of St. George's Hospital, has examined them microscopically, and he is of opinion that they are bits of milk curd.

Seymour Taylor (*Clinical Journal*, pp. 130, 94, Vol. II) states that the diarrhoea is largely due to the diet. No doubt the diet is an important factor in increasing or diminishing the amount of diarrhoea, but possibly the amount of diarrhoea may depend on the extent to which the bowel is involved.

Temperature.—The accompanying chart shows the temperatures and weekly weightings of B. C. D.

Taking the first four cases, one notices that on the—

2nd day the morning temperature in 4 is normal

3rd	"	"	"	3	"
4th	"	"	"	2	"
5th	"	"	"	none	"

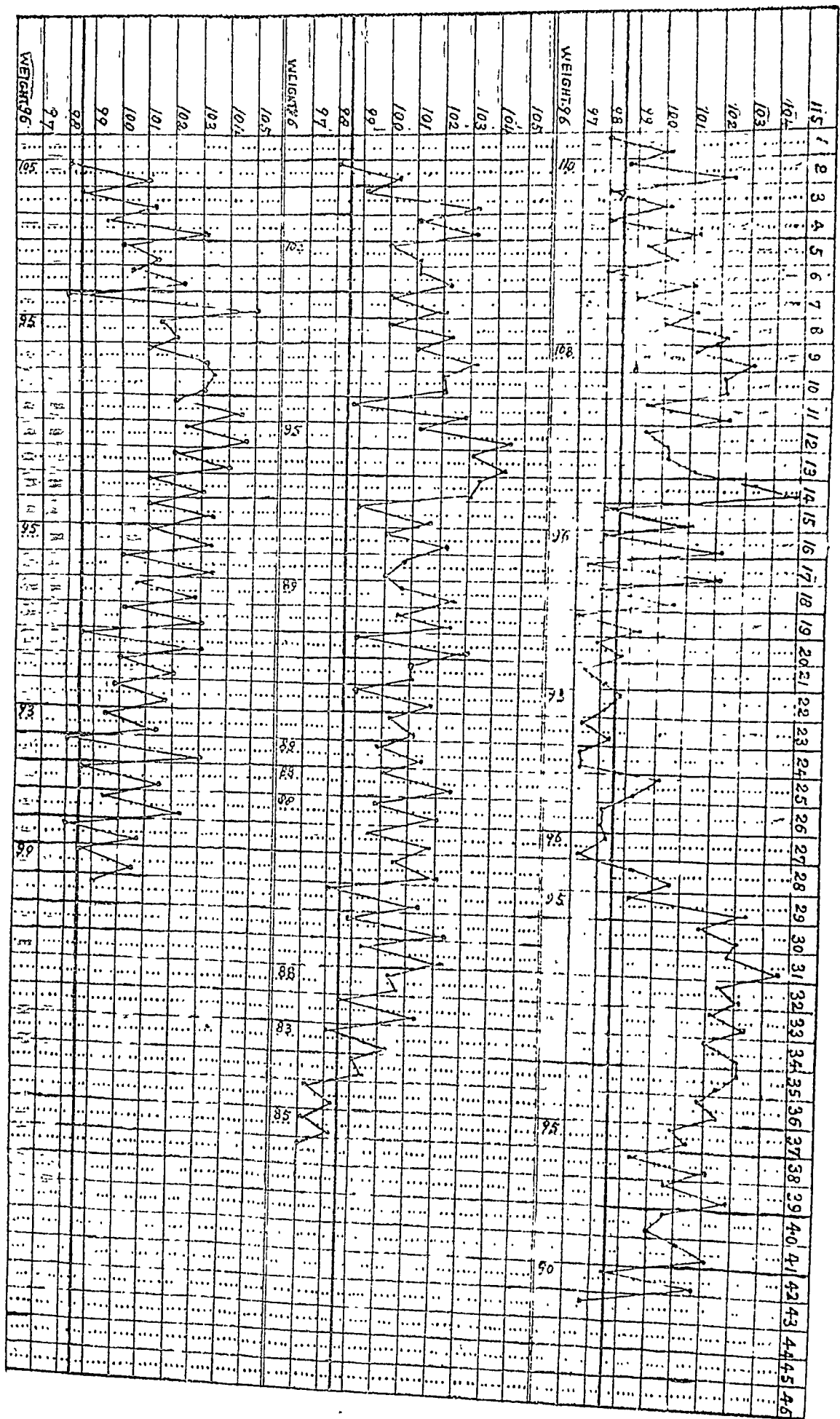
From the 6th to the 10th day there is a general tendency upwards with slight morning remissions.

On the 11th day there is a remission. This 11th day remission I have not seen noticed in books—Professor Cuming, ex-President of the British Medical Association, has mentioned it.

From the 11th to the 14th day the temperature varies in the different cases.

In A. and D. the morning and evening temperatures do not change much from day to day; there is a morning remission of from two to three degrees.

ENTERIC FEVER IN NATIVES OF INDIA.
BY ANDREW BUCHANAN, M.A., M.D.



In B. and C. there is an upward tendency between the 11th and 14th days, and the morning remission was slight or absent.

The highest evening temperatures in A. and B. were on the 14th day; the highest evening temperatures in C. were on the 12th and 13th days; but the temperature on the 14th was almost as high.

The highest morning temperatures were on the 13th, 14th, 13th, 12th, 9th, respectively.

On the 12th and 13th days the temperature of B. was lower than that of A. C. D.; but B. during that time was in a much more serious condition. The temperature then does not directly indicate the severity (or mildness) of the attack.

It is said that if the temperature in any case should go up to 105° the case is nearly always fatal. Seymour Taylor of the West End Hospital, London, states that of 400 cases he had only seen four recover who had temperatures above 105° F. Three of these five cases had a temperature of 105°, and yet they all recovered. It should be stated, however, that the temperatures here recorded were taken in the mouth, and the mouth and axillary temperatures often differ by more than two degrees, as will be seen from the following temperatures which were recorded in the case of E. (female):—

		In mouth.	In axilla.
On 12th day—at 2 P. M.		105·4	103·
„	6 P. M.	103·4	102·6
„	12 P. M.	102·2	100·8
On 13th day—	6 P. M.	101·0	100·6
„	11 P. M.	98·6	97·4

With this rapid fall there was marked improvement in her condition. It was practically a crisis, and this is unusual in enteric fever.

The difference of temperature in the mouth and in the axilla many account for the different temperatures taken as indicating hyperpyrexia by different authorities. Dr. John Curnow of King's College Hospital, Clinical Journal, page 227 of*, takes 104° as indicating hyperpyrexia. Abercrombie of Charing Cross, takes 106° F., as indicating hyperpyrexia.

Pulse.—The slow pulse with high temperature is said to be one of the peculiarities of enteric fever. The pulse in A. was 95° on the 14th day when the temperature was above 102°. In C. pulse 102°, while temperature was 101°. In D. the pulse was markedly dicrotic, this was well seen in the brachial artery near the elbow joint when the arm was bent.

Eruption.—In A. it was first seen on the 12th day, but a careful search had not been made earlier: six spots were marked.

14th day.—One more seen, others disappearing.

17th day.—Spots disappeared.

B. 12th day.—Nine spots marked.

13th day.—More spots noticed; those of previous day are the same.

14th day.—The nine spots of 12th day have disappeared; six marked yesterday present.

[Note.—Temperature up to 105·2°]

C.—Spots very few; noticed on 10th gone by 15th. Spots not distinct in this case.

D.—Five small spots noticed on 8th day.

[Note.—Temperature 105° on 7th day.]

10th day.—A second crop appeared.

11th day.—Those of 8th disappeared.

15th day.—Three doubtful spots.

The skin of this man is fair for a native and the spots were surrounded with a caustic or ink mark.

Many medical men would be inclined to doubt that the eruption could be seen in a Native; but the eruptions in these cases were examined by several other medical men, among whom I may mention Surgeon-Colonel Newman, Surgeon-Major Harris, Surgeons-Captain Price and Faichnie, and one lady practitioner, Dr. Agnes Henderson; they all agreed that the eruption was undoubtedly that of enteric fever.

The spots had a pink tinge, were slightly raised, could be felt by the finger, lasted for about four days. In Europeans a yellow stain remains where the spot appeared. In Natives the situation of the spot is marked by a black stain which could be seen for some weeks after the date of disappearance of eruption.

E. 11th day.—One suspicious spot under right breast.

Sudamina.—Noticed in B. on 18th day, along the sides of the chest. In D. on the 15th day there was a marked crop of sudamina over the chest and abdomen, but chiefly over the middle of the sternum; also in E. on the 13th day. (Note the mouth T. was 104·8 and she had free perspiration).

Headache.—All complained of headache, and when asked to show the situation they generally grasped the forehead indicating that the headache was frontal. This tallies with what is found in Europeans.

Deafness.—Is most marked in Europeans between the 10th and 14th days (Roberts).

In A. it was noted on 9th day, was still marked on 28th day though improving.

B.—Noted on 10th day, still present on the 29th day—though much less.

C.—Noted on 13th day, continued till 25th.

D.—Noted on 11th day, less on the 15th.

E.—Noted on 10th day. Attendants say that she had been slightly deaf for a few days before.

In the first four cases it was most marked about the 14th day.

Delirium and loss of consciousness.—Seymour Taylor (Clinical Journal, page 127 of 94, Vol. I), says delirium at night in cases of even moderate severity is the rule.

* I have not this volume at hand and regret that I cannot give the exact reference.

A. on the 13th day would not answer questions when spoken to.

B. on the 9th day began to pass urine and stools unconsciously; this continued till the 14th day. He was very drowsy during this time.

C. was sensible but was slow in giving replies.

D. and E. were not at any time delirious.

Relapse.—Seymour Taylor (Clinical Journal, 94, Vol. II, page 124) states that relapse may come on between the 4th and 10th days after end of the first attack and that the usual duration is 10 days.

(To be continued.)

A Mirror of Hospital Practice.

STRICTURE OF THE PYLORUS. GASTROTOMY AND DILATION OF PYLORIC ORIFICE.

By W. K. HATCH, F.R.C.S.,

LT.-COL., I.M.S.,

Principal, Grant Medical College.

THE patient, a Hindoo male, of about 30 years, was admitted into my ward about two years ago, suffering from dilation of the stomach and symptoms of pyloric obstruction. I operated on him, and his case was published in the *Lancet*. Subsequent to the operation, which took place in July 1897, he enjoyed good health for six months and also gained weight and strength. But three months before his second admission, there was a gradual return of his old symptoms and consequent emaciation. He tried various remedies and, having found them ineffectual, he again returned to the J. J. Hospital on 10th October 1898, in very much the same condition as on the first occasion.

The operation first performed, and which gave him immediate relief, was that of digital dilatation of the pylorus, the finger having been passed up to the hilt through a very tight orifice, apparently due entirely to spasm of the sphincter.

On the 2nd admission, he was found to be thin and anxious-looking and somewhat anæmic, and complaining of pain in the epigastrium and right hypochondriac region.

This pain was not continuous, but came on at intervals, of 3 or 4 hours, and was relieved by pressure to some extent; there appeared to be tenderness below the right costal margin. There was also vomiting; this came on two to three hours after food, and was not excited by any particular kind of food. Some pain was felt before vomiting began and was relieved by this act almost completely; no blood was or ever had been vomited. He also stated that he had a

peculiar sensation like a ball passing from right to left obliquely across the abdomen and again from left to right. Pain in the dorsal region was also complained of, also relieved by pressure; but this pain was only occasionally felt. The tongue was coated; deglutition easily performed; the bowels confined, the stools being hard and scanty. There was little or no appetite, but considerable thirst and dryness of the throat. No tumour could be detected in the abdomen, the walls of which, being lax, allowed a thorough exploration; the right rectus seemed to be rather more tense than the left and pain on pressure was felt an inch below the costal margin and an inch external and to the right of the middle line. The stomach was, as before, very much dilated, the lower border coming below the umbilicus at times. No glandular enlargement could be detected anywhere. He was placed under treatment; the diet was carefully regulated, bismuth and morphia were administered. No improvement resulted and, at the patient's own request, he was again operated on. The operation was performed on 10th November 1898; the abdomen was first washed, and the stomach thoroughly cleansed with warm boric lotion. After chloroforming, an incision, about three inches long, beginning an inch below the costal margin, was made in the left rectus muscle; the fibres having been separated and the peritoneum exposed, the latter was divided, the omentum drawn to one side and the stomach searched for; being large it was at once found and the cicatrix of the first operation was plainly seen. The stomach was then opened in a vertical direction by a three-inch incision and washed out with boric lotion. The cavity was very extensive, but by the aid of an electric lamp, introduced through the incision, the whole surface of the mucous membrane was examined minutely; no sign of any ulceration or cicatrization could be found. The orifice of the pylorus could not at first be found, but at length a mere slit was felt, through which the forefinger was with difficulty introduced; the mucous membrane in the neighbourhood was then very carefully inspected after drawing up the pyloric end of the stomach to the surface, and was found to be perfectly healthy. It was decided to thoroughly dilate it again. There was considerable resistance, but at length two fingers were passed completely through into the duodenum. The muscular coats of the stomach were then brought together by a continuous suture and the peritoneal coats by interrupted silk sutures; the abdominal incision was then closed and the wound sealed with collodion and cotton. Next morning there was vomiting of a brownish fluid with an acid reaction, and the patient suffered from heartburn; he was fed by beef-tea enemata. For several days he was restless and complained of pain in the seat of operation and the bowels were confined; after four

days these symptoms were less troublesome and gradually subsided. His temperature was irregular and the urine contained some albumen and urates for several days. On the 19th November the stitches were removed from the wound, which was soundly healed. Until the date of discharge, he complained of a pain on the right side of the chest; it was not severe and no cause could be found. His temperature was quite normal and the vomiting entirely ceased. The bowels gave some trouble, the stools being hard and light colored, and for some time the appetite remained poor. Eventually, however, his general condition was much improved and he took his usual food perfectly. He was discharged "well" on December 17th, 1898.

Remarks.—Gastrotomy has been frequently advised in doubtful cases of late years, and the satisfactory way in which I found the whole surface of the mucous membrane could be explored has led me to believe that, in such cases, when the diagnosis cannot readily be made, this operation should be undertaken. The danger appears to be slight, and by an incision through the rectus muscle the likelihood of hernia would be minimised. I should not hesitate to recommend it and undertake the operation, if I thought it advisable.

A CASE OF ABSCESS OF THE SPLEEN.

By MAHOMED AZEEM, M.B.,

ASSISTANT SURGEON,

Civil Dispensary, Khelat, Beluchistan.

MY excuse for bringing the case before the profession is the extreme rarity of the disease and the misleading character of the symptoms which mostly pointed to a severe lung mischief.

The patient under consideration was a Mahomedan youth, Sahib Dad by name, married, aged about 22, shoemaker by occupation, resident of Khelat, admitted on the 16th February 1897, for low hectic fever, very troublesome cough, agonising pains in the chest, enlarged spleen and extreme debility. His family history showed nothing peculiar, and his previous personal history was equally unimportant. The history of his present illness was, however, very definite and full of interest. He had three very hard attacks of fever (probably malarial), during which the spleen had gradually increased. The first attack of the fever he had about the middle of July 1895, which lasted for full five months; it was intermittent quartan in type and left the patient of its own accord. After an interval of three or four months, during which the patient was apparently all right with the ex-

ception of the enlarged spleen, the second attack of the fever came on, and, lasting for about three months, left the patient of its own accord as before, to return again in its full force in December 1896.

The spleen was the organ most particularly affected. This time, however, the fever was of the simple intermittent character, with complete daily intermission in the morning. It came on with well marked chills in the morning and subsided with profuse sweating in the evening. Lasting for a month or so, it passed into a low hectic fever, which has continued up to the date of his admission. It was during this attack that the cough and the pectoral pains had made their appearance.

Condition on admission.—The patient is a young man, aged about 22, very weak and emaciated, reduced to mere bony skeleton, of dark complexion, eyes sunken, conjunctivæ pale, complains of pain in the right side of the chest, both front and behind, of much troublesome cough, with profuse expectoration, of low fever, of much enlarged spleen, which is somewhat tender to the touch and of extreme general debility.

Physical examination of the chest.—Impaired movements on the right side. Supra and infra-clavicular fossæ depressed on both sides; marked dulness at the right apex both in front and behind; increased vocal fremitus over area of dulness, with moist crepitant rales, and increased vocal resonance. The left side was apparently healthy. The heart sounds were weak, but otherwise normal. Pulse small, weak and soft 54 p. m. Respiration regular, but little increased in frequency, 24 p. m. The abdomen rather retracted with the prominent enlarged spleen occupying the left of the abdomen anteriorly, it extended about an inch beyond the umbilicus below almost to the anterior supra-iliac spine. The tumour was hard and tender on percussion. The liver enlarged to finger's breadth beneath the costal arch and tender to the touch. The notch on the anterior border of the spleen was distinctly visible and perceptible to the examining finger.

Tongue, moist and thickly coated; no appetite since the last three months; bowels constipated. Temperature 100.

Treatment.—To begin with, a saline mixture was given which opened his bowels, after which ordinary remedies for cough and chest pains were prescribed but with very little effect. The spleen required attention only when the chest symptoms were somewhat relieved. On the 5th March the patient complained of severe pain over the hepatic region, which was relieved by linseed poultices and hot fomentations. The pain, however, increased in extent and severity by the 9th, extending to the right lumbar

region, which was somewhat swollen. Had it not been for the fortunate appearance of the bad pain and swelling in the right lumbar region, which required an exploratory puncture on the 13th to make the matter clear, I am sure the case would have ended fatally. The puncture was, however, not made in the right lumbar region, but on the most prominent part of the splenic tumour, to return to the most painful region, if it gave negative results. Thick, white pus having appeared in the groove of the needle, no other exploration was thought necessary, and the pain in the right lumbar region considered to be a pressure symptom due to the extension of the suppurating process to the parts not accustomed to the pressure of the enlarged spleen. That this conjecture was true was proved by the result of the operation. I may add that the temperature which had hitherto been low, ranging between 99° F. and 100° F., ran high and registered between 103° F. and 103° F.

Next morning, the 14th March, the patient was chloroformed and prepared in the ordinary way for an operation on the abdomen. Before opening the abscess the tumour was explored in two places in the left lineæ semilunares, and the abscess opened cautiously between the punctures. The incision was about 2½ inches in length.

The surface of the spleen was fortunately adherent to the anterior abdominal wall, and therefore no extravasation of the pus into the general peritoneal cavity occurred. As soon as the abscess was opened, a large quantity of thick, very foetid pus mixed with large sloughs came out. The colour was dark in parts and white in others. It measured two pounds, and the smell was so offensive, as to oblige those present to instinctively close their noses. The abscess cavity was tri-radiate in shape. The posterior angle reached to the very posterior abdominal wall. The other two angles were directed to the right and the iliac spine, but could not be reached by the examining finger. The cavity was thoroughly washed out with sterilised plain water till the fluid escaped clear. A rubber drainage tube was put in, and the wound dressed antiseptically. When the dressing was completed, the patient was found in a semi-collapsed condition; the skin was moist, pulse slow, respirations very weak, and the eyes sunken to their very depth. Ten minims of the liquor strychnia B. P. (an heroic dose) were injected hypodermically in the arm without delay, and a stimulant mixture containing spt. ammoni aromatic, spt. ether and tinct. digitalis by the mouth. This was the end of all anxiety, as the patient progressed the best that could be desired. The temperature, which was about 103 in the morning, went down to 95.2 in the evening, and the subsequent history of the case was uneventful. All the

symptoms, the pectoral pains, the abdominal pains, the cough, and the fever almost all disappeared after the operation. His temperature never rose above 98.4° F.

The after-treatment consisted mainly in the thorough daily washing of the abscess cavity with sterilised warm water or boracic lotion till the fluid escaped clear. Fellows' syrup, which was stopped some days before the operation, was recommended and continued till the patient's discharge from the hospital on the 23rd April 1897, 39 days after the operation. On discharge there was a mere superficial ulcer, and the patient has considerably gained in flesh and improved in general health.

Remarks.—I do not pretend to have made the diagnosis correct in the very beginning. The urgent symptoms and signs all indicated something very wrong with the lung. The spleen seemed to be merely enlarged and did not appear in the beginning to be much troubling the patient. An opinion was indeed given as to the apical consolidation of the lung, probably of the tuberculous nature. It was suddenly and fortunately, I should say, for the patient that the matter was made clear by the sudden extension of the slow inflammatory and suppurative processes to the right. I am inclined to think that an abscess in the spleen was there from a long time, but its exact date I am unable to define, and that it was an acute outburst of an already chronic inflammation that revealed the true nature of the disease. That this was so is quite evident from the cachectic condition of the patient and his hectic fever; that it was the spleen that suppurated is clear from the facts; that the spleen was enlarged from some years before, and its almost total disappearance on the recovery of the patient. The notch on the anterior border of the organ was distinctly marked.

The nature of the contents of the abscess—large dusky coloured sloughs intermingled with fluid portions of the pus—clearly show, I think, that there had been extensive hæmorrhagic infarctions in the interior of the organ, and that these infarctions suppurated later on from what cause I cannot say. These hæmorrhagic infarctions were produced probably as effect of malarial fever, of which the patient had had several attacks. The lung symptoms, I am inclined to think, were pressure symptoms kept up by the enlarged and inflamed spleen. This view is strengthened by their rapid disappearance when the pressure was removed. There was no history of traumatism.

It is now more than two years that the patient has left the hospital. He has since then been in the best of his health, following his usual occupation of a shoemaker.

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ENTERIC FEVER AMONG NATIVES OF
INDIA.

It may be that some apology is required for again dragging on the scene the well-worn subject of the existence or prevalence of enteric among natives of India. As it happens, however, we have been able to offer to our readers two papers dealing with this subject, one by Major Andrew Buchanan of Nagpur, who has had a considerable experience of enteric fever in native prisoners, in most cases being able to verify the diagnosis by *post-mortem* examinations.

The second paper, in our last issue, by Captain R. H. Maddox, I.M.S., gave a case which it would be difficult, if not impossible, to call other than enteric, though it was not absolutely typical, and though no possible source of any infection could be traced. Our columns in past years have often contained discussions on the subject, but it cannot be said that this question, one of the utmost importance, is yet finally settled. A review of all that has been written on the subject, and a pretty extensive inquiry as to the views of medical men in India, who are in a position to give an opinion on the subject, seems to result in something like the following.

Among those who have great experience of the disease, as it prevails among British soldiers in India, a sometimes half-expressed feeling seems to exist that enteric fever does prevail among natives, but that it is often diagnosed as "simple continued" or "remittent fever." We will further on show the futility of this view. Among another class of officers, and they chiefly in the senior ranks, the view is pretty largely held that enteric fever is very rare or almost unknown among natives; on the other hand, to judge by the reports of younger men, it would appear that enteric fever is by no means so rare in natives as is generally supposed, and this is an opinion shared also by some men in a position to give an authoritative decision on the matter, *e.g.*, Major Drury, I.M.S., who, as Professor of Pathology in the Calcutta Medical College, is peculiarly in a position which enables him to give a weighty opinion on the subject.

He believes that enteric fever is more common among natives of Bengal than is commonly believed.

The question is not altogether one which can be profitably discussed with reference to natives of India only. In other tropical countries and among other tropical races the same vexed question arises. Our readers may remember that some months ago we called attention to a remarkable article in the *Lancet* in which Dr. Brown gave as his opinion that enteric fever was certainly common among natives of the Malay Peninsula, basing his view on his examinations of their blood by Widal's test. We think, however, that we are correct when we say that this investigation took place in the early days of the use of Widal's test, and before it became certain that it was only in very high dilutions that this test was of value; and we think the same fallacy underlay the experiments made by Major S. J. Freyer, R.A.M.C., a couple of years ago, when he claimed to have shown that the majority of natives of India had had typhoid in their youth. Among the Red Indians of North America typhoid is reported by Woodward and other writers to be common, and an assertion similar to that of Major Freyer has been made about the prevalence of enteric in negroes in the United States; but more recent observations throw much doubt upon these statements. On the other hand, it has been shown that the Arabs of Algeria suffer from typhoid about 100 times less than French soldiers stationed in that country. Among the Chinese it is very doubtful if genuine typhoid cases occur; if they do it is only very rarely. On the other hand, in the late Japan-China War, 131 cases were returned as "enteric." In many parts of South Africa enteric has undoubtedly appeared among European troops and colonists, and it is said, but we have seen no details to support the statement that enteric is common among the Kaffir tribes.

In 1897 several medical officers, in their Annual Regimental Reports, gave cases which they regarded as enteric among sepoys, *e.g.*, in the 1-4th Goorkhas, the 44th Goorkhas, in the 27th Punjab Infantry at Kila Drosh in Chitral, and in the 4th Punjab Infantry at Wano. The clinical histories in some cases pointed clearly to enteric; in others the reporters state that, if such a heading were permitted, they would have returned them as "typho-malaria." Unfortunately, moreover, out of forty-seven cases return-

ed as enteric in the Native Army in 1897, in only three of the fatal cases was a *post-mortem* examination obtained, and in these three cases the lesions found "support at least do not contradict the diagnosis made." In all cases it was found impossible to trace the source of the infection.

The question of *post-mortem* examinations is most important. In private practice among natives of India and in the Native Army, it is quite the exception to get an autopsy, so that the diagnosis usually remains unverified; moreover it is probable that the death-rate from enteric among natives is not high; therefore, the vast majority of cases recover. We must, therefore, turn to jail statistics, for cases in prison are very unlikely to be overlooked, and moreover almost every prisoner who dies in jail is subjected to *post-mortem* examination, hence the peculiar value of jail statistics in this connection. On turning to the Sanitary Commissioners' Report, we find in 1896 in all the jails of India, twenty-one cases returned as enteric with seven deaths, and in 1897 thirty-four cases with fifteen deaths. The most of these cases were in all probability genuine enteric, or at least were cases clinically resembling enteric, and with ulceration of Peyer's patches found *post-mortem*. When we consider these few dozen cases among the many thousand cases of fever admitted to all the jail hospitals in India, it at once emphasises the great rarity of the disease in adult natives. Moreover, when it is remembered, as the Sanitary Commissioner has frequently pointed out, that while the decennial ratio for the death-rate from enteric fever of European troops is 19 *per mille*, among Native Troops it is only '2, and among prisoners only '3 it shows the same fact. Again, the death-rate of European troops in 1897 from enteric fever was five times as great as that of the Native army for all kinds of fever; therefore, whatever may be the nature of the remittent and continued fevers from which native soldiers suffer, it is clear that native soldiers and convicts are very much less liable to enteric than are European soldiers. We have often heard of enteric fever among Goorkhas, and it is probably that it is more common among them than among other natives. On the other hand, Captain C. Duer, F.R.C.S., I.M.S., the Junior Civil Surgeon of Rangoon, tells us he has never seen a case of enteric in a Burman. In this connection, we may remember, that tuberculosis is cer-

tainly common among both Goorkhas and Burmans, and we have long held that a long continued fever in a Burman prisoner means tuberculosis, and we have never seen a case of enteric in a Burman prisoner. In fact, if we may be allowed here to relate a personal experience, the present writer, though in charge of large central jails for over seven years, has never yet seen a case of enteric fever, and he has never missed a *post-mortem* examination. On the other hand, in 1897, two jails, that of Nagpur and that of Mangalore, report cases. Major Andrew Buchanan's paper states the case very clearly for his large jail in Nagpur; but as regards the Mangalore cases, it will be enough to state that the Sanitary Commissioner considered the report "imperfect."

The result then of this brief review of the evidence before us points to the fact of the undoubted existence, as well as the undoubted rarity of the disease among Natives of India. The figures for past ten years show an almost equal ratio of cases among sepoys and prisoners, and that they die much less from "fevers" than the European soldiers; therefore it is clear that the question cannot be merely one of diagnosis. The fact seems to be that nearly every medical man in India can point to a few cases which he either proved to be enteric or which clinically strongly resembled enteric; but what are these few cases among the thousands of fever cases seen by every medical man during the year. In the General Hospital, Madras, we learn from figures kindly supplied by Drs. Brown and Maitland, in the year 1898, that there were 29 cases among Europeans and only five among natives. All the latter, it may be noted, being in young individuals. We are also much indebted to Lt.-Col. S. H. Browne, I.M.S., Principal of the Lahore Medical School, for an expression of his views on this matter. He informs us that during the past six years there have been only eleven native patients admitted into the Mayo Hospital for enteric fever; of these four died in hospital, and in two of them the diagnosis was confirmed at the autopsy. Three of the eleven cases were in children of 7, 11, and 11 years. The conclusions which Lt.-Col. Browne draws from his experience of the disease in the Punjab is that enteric fever is uncommon amongst natives; only 11 cases so diagnosed out of over 1,200 patients admitted for fever and carefully diagnosed in the wards proves this to be a fact. On the other hand, Col. Browne has no doubt of the occur-

rence (though rarely) of this disease in natives. He says that one of the most beautiful and characteristic specimens of typhoid lesions which he ever saw came from one of the Lahore cases above referred to. Another interesting note is added by Col. Browne, *viz.*, that the prevalence of the disease has some connection with the dietary of the patients. Of the Lahore cases, two were in Native Christians, one in a man employed in a railway refreshment room, and one in a native of semi-European habits, a schoolmaster, and another in a cook from Srinagar. All these patients were meat eaters, and none of them strictly bound by caste rules. "Nevertheless," adds Col. Browne, "I have known the disease to occur in a Brahmin." He therefore inclines to the theory that the prevalence of enteric fever is connected with the dietary (apart from specific contamination of course) and that, as the native of India assimilates his diet to that of Europeans the more liable does he become to the disease.

It has been clearly shown above, and it is within the experience of all medical men in India, that while enteric fever is by no means unknown among Indians, yet it is undoubtedly comparatively rare among them.

When we leave the region of facts and come to try to consider the explanation of this lesser prevalence, we come upon less sure ground, and enter the region of conjecture. The theory which appears to us to have the greatest semblance to probability is that which points to a great protective evolution on the part of natives of tropical climates to this disease due to their former greater elimination by this disease. We must admit that enteric and imperfect sanitation go hand-in-hand. We must admit that in ancient days sanitation in India was practically *nil*; therefore, if these premises are correct, there must have been a very considerable elimination by means of enteric fever of the less resistant and a survival of the more resistant who would be able to leave offspring, who would inherit their peculiarities and be able to survive and continue the race in spite of the presence of the disease. If we believe in evolution, just as the presence of carnivora to any country must have called forth in weaker creatures (hares or antelopes) increasing powers of evading attack, so also the presence of any fatal disease during generations must tend to call forth, in the race attacked, a gradually increasing power of resist-

ance to it. In fact enteric is now much less prevalent and fatal in natives as compared with Europeans just to the same extent, and for the same reasons as rinderpest is less fatal and less prevalent in India than in South Africa, where it has been recently introduced.

We must, however, leave this region of speculation, but recommend any of our readers to wish to follow out this line of thought to read the chapters on Physical Evolution in Dr. Archdall Reid's admirable volume published a few years ago entitled "The Present Evolution of Man," in which it is shown that at present man's evolution is not towards physical or intellectual strength as in his remote ancestry, but is mainly an evolution against disease and in town and city-dwellers mainly an evolution against diseases produced by living micro-organisms.

THERMIC FEVER OR "DOG-STAR DISEASE."

So long as Mr. Sambon remained an irresponsible person his views regarding thermic fever were not of much consequence. Now that he has been appointed a lecturer at the New School of Tropical Medicine in London, matters have changed. We can hardly believe that in his new position he will resist the temptation to inculcate his theories in the minds of those who come within the sphere of his influence as a teacher. Under these circumstances it is right that some protest should be made against the position taken up by him in regard to the question of heat stroke or thermic fever.

The discussion which took place at the recent meeting of the British Medical Association on this subject was somewhat disappointing. As Mr. Sambon's views have been countenanced by Dr. Manson, as well as by one or two foreign medical men, it was doubtless considered desirable that the subject should be brought forward for discussion. The small number of medical men who took part in the discussion was probably due to two causes. In the first place, the number of those present who had any practical knowledge of the subject must have been comparatively limited. In the second place, there appears to be a tendency amongst those of the medical profession who hail from India to treat the whole matter as a joke, rather than as one meriting serious discussion. The truth is that Mr. Sambon's views

regarding the acclimatisation of Europeans in the tropics are so crude and his statements in that subject so pregnant with error, that the medical profession in India is inclined to look askance at any theories propounded by him.

All the medical men of experience who took part in the discussion at the association meeting were strongly opposed to Mr. Sambon's theories, and his own remarks on that occasion tended, if possible, to still further discredit his opinions. In criticising Lieutenant-Colonel McCartie's article, he stated that the latter "had confounded cerebral hæmorrhage with siriasis." There is, however, nothing in the article in question to justify this astounding assertion or to throw any doubt upon the correctness of Lieutenant-Colonel McCartie's diagnosis; on the other hand, the facts related in that article furnish the strongest evidence possible of the incorrectness of Mr. Sambon's theories. In the instances to which Lieutenant-Colonel McCartie alludes all the soldiers were exposed to similar conditions, except in the matter of clothing; with the result that many of those who were improperly clothed succumbed to heat apoplexy, whilst all the others escaped.

One of Mr. Sambon's stock arguments, which was again brought forward on this occasion, is to the effect that the disease is unknown in many of the hottest parts of the world. It may be true that there are some very hot countries in which cases of heat stroke have not been observed, but it does not follow that such cases do not occur. Our experience of many tropical countries is still very limited. On the other hand, we know that in India, the tropical country with which we are most intimately acquainted, the disease is universal, and may occur anywhere between the Khyber and Cape Comorin. Moreover, as is well known, auxiliary agents, such as exhausting labour, warm and tight clothing, or closeness and moisture of the atmosphere frequently share in inducing the disease, and unless some such cause is also in operation, high temperature alone may not suffice to produce the disorder.

Mr. Sambon states that ninety per cent. of the cases of heat apoplexy which occur in the British Navy are met with in the Red Sea. To account for this fact he assumes that the disease is endemic in the Red Sea ports, and that the stokers contract the disease whilst coaling in

these places. We are not aware where these coaling stations are to which Mr. Sambon refers, and are inclined to doubt their existence. At any rate British men-of-war do all their coaling outside the Red Sea either at Port Said or Aden. If the disease were contracted at either of the latter ports why do cases not occur in the Mediterranean or in the Indian Ocean; why is it that they only develop when the ships enter the Red Sea? This is a typical instance of Mr. Sambon's method of reasoning from false premises.

The fact that ninety per cent. of cases of heat stroke that occur in the British Navy are met with in the Red Sea is a strong argument in favour of the ordinary views regarding the disease. Although there are many places where the thermometer registers a much higher degree of temperature than in the Red Sea, yet there is no place in the world where the heat is so intensely oppressive and so exhausting in its effects.

Mr. Sambon's views regarding the pathology of heat stroke are, to say the least, extremely inconsistent. He admits that the effects of heat alone do produce one form of sunstroke, namely, cardiac exhaustion and syncope; yet he will not admit that anything except a chemical agent, such as a toxin, can produce the alternative form of insolation that we term heat stroke. In other words, heat may produce cardiac exhaustion, but it cannot induce exhaustion of the nerve centres. Neither Mr. Sambon nor any one else has brought forward any valid reason for rejecting the view that the symptoms of heat apoplexy are due to the exhausting effect of high temperature, assisted by some of the auxiliary agents already alluded to, upon the nerve centres, more especially the heat regulating apparatus. The results produced are in fact identical with those so frequently met with at the termination of attacks of acute disease such as tetanus, where death is immediately preceded by hyperpyrexia and coma.

All that we know regarding this disease, as it is met with in India, is opposed to the view of its being of microbic origin, and it will require evidence of a much more convincing nature than any hitherto brought forward by Mr. Sambon before medical men in this country will be induced to alter their views upon the subject.

LONDON LETTER.

THE INTRODUCTORIES.

THE opening of the winter session has been celebrated by the usual fanfare of introductory lectures and consumption of inaugural dinners. The introductory addresses, whose number and popularity appear to be on the wane, have been of several types. They have been philosophical, scientific, historical, retrospective and prospective, didactic and special. The philosophical category has been well represented by Sir James Crichton Browne's dissertation on the "Quest of the Ideal" at Owen's College, Manchester, and Sir William T. Gairdener's discourse on "Two Disciplines in Education" at Mason University College, Birmingham. The historical class includes Dr. Bryon Bramwell's retrospect of "Thirty-five years of Medical Progress" at Yorkshire College, Leeds; Dr. Dickenson's Review of "Medicine Old and New" at St. George's; Dr. Mitchell Bruce at Charing Cross sought to present an "Outlook of Medicine and its Lessons." The purely didactic introductory—perhaps the most time-honoured member of the family—finds example in Mr. Garrett Anderson's sermon on the "Method of Studying Medicine" at the London School of Medicine for Women, Mr. Murray's dissertation on the "Student and his Work" at Middlesex, and Mr. Plimmer's remarks on "Some Motives and Methods in Medicine" at St. Mary's. More or less detailed reports of these and others will be found in the *Lancet* and *British Medical Journal*. Most of the leading dailies published abstracts and made them the subject of a kindly and appreciative leader.

THE LONDON SCHOOL OF TROPICAL MEDICINE.

Among the addresses dealing with special topics, the most interesting to medical men who practise or have practised in hot climates is the lecture delivered by Dr. Patrick Manson on the occasion of the opening of the school, which has been established in connection with the Albert Dock Branch Hospital of the Seamen's Hospital Society for the purpose of imparting instruction in tropical diseases. Dr. Manson described in clear and judicious terms the circumstances under which the school was conceived and developed, and alluded to difficulties and unpleasantnesses which arose during the

process of parturition. These according to the scriptural illustration are all likely to be forgotten in the joy of successful production of an institution possessing a strong vitality. None but feelings of congratulation and hope can now be entertained for an enterprise which has a strong justification in the need for it, and a certain warrant of success in the thoroughness with which it has been carried out. A syllabus of subjects, lectures, and lecturers has been issued, which indicates that the teaching will be comprehensive, searching, able and practical. The scheme has become a living working reality, and the benefits of it will be material, far-reaching, eagerly sought and greatly appreciated.

THE "PRACTITIONER" ON NETLEY.

In lauding the school and its work, it seems to me that it was injudicious and in bad taste on the part of the Editor of the *Practitioner* (October number, p. 366) to associate his praise with disparagement of the Netley School (the forerunner of all similar schools at home and abroad), and to detract from the value of the clinical material available there for instruction in tropical disease. Unfortunately the President of the Tropical Section at the Portsmouth Meeting of the British Medical Association instituted a comparison between the amount of this material available for the use of Netley, London and Liverpool Schools, which was resented as being intended (which I am certain was not the case) to belittle the two latter. Mr. Morris, as a counterblast, argues that the quality of the material available in London is vastly superior to that available in Netley. Tropical diseases are, in London, to be seen and studied "in their acute stages as they will be met with when they have to be dealt with in their native haunts;" whereas at Netley "floating pathological hulks," exhibiting the constitutional decay consequent on previous tropical disease, are the only available illustrations of instruction. The cases which present themselves in the London Hospital have not assuredly originated in the docks but in tropical seaports, and stand on the same footing as respects chronicity with those originating in tropical stations, maritime and inland, whence soldiers are invalided, and in both instances they represent the pathological products of conditions which can only be studied *in loco*. More than half of the Netley "wrecks" recover under treat-

ment—climatic, hygienic, and medicinal—and are restored to efficiency and returned to duty; and, even as regards the most advanced and intractable of them, they furnish evidences of the operation of factors which cannot in this country be seen in operation or in incipency; and they present opportunities of studying deteriorating influences encountered abroad, and describing how these arise and operate and may be avoided or counteracted.

MANSON'S GENERALIZATIONS.

Dr. Manson presented the striking and indisputable view that pathology has in these days become largely a study of the natural history of parasites and vermin. Questions regarding climate, physical and meteorological forces and the epidemic constitution of the atmosphere are held to pale and vanish before inquiries regarding the character and habits of these *contagia viva*. I am not sure that position is sound. These questions have changed their venue rather than lost their interest and value. The environment of the organism causing the blight has come to excite greater curiosity than of the subject undergoing the blight. This process of minimising climatic and especially tropical influences on the subject is being overdone. There are delicate points affecting resistance, susceptibility, acclimatisation, immunity and so forth, upon which a study of parasites cannot throw light. Manson boldly avers that the temperature and composition of the blood and internal organs being the same all over the world, an organism obtaining access to the interior of the body will retain its vitality and complete its life cycle under any or all conditions of external nature. The geographical distribution of disease, therefore, is a mere matter of the circumstances and duration of extrasomatic life of pathogenetic organisms in transit from the diseased to the healthy. Unless this transit takes place at blood-heat and with practically no interval of extrasomatic existence as in the case, say, of venereal infections, it is difficult to see how organisms can escape the operation of climatic influences. Be this as it may, I fear that our knowledge is not as yet sufficient to support the generalizations that (1) bacterial diseases are cosmopolitan, and (2) that entozoal diseases are of limited geographical range. Manson has himself described that many bacterial diseases are of very limited incidence

and many entozoal of very wide range, and the seasonal variation of many bacterial infections, such as plague, cholera and enteric fever, which he calls cosmopolitan, but are not really so in any sense, to prove that their contagia are very amenable to influences outside of the bodies of the subject which they infest. Generalization of the sort had better be delayed until our knowledge becomes more precise and exhaustive.

THE CRUSADE AGAINST VERMIN.

In certain cases the tendency of modern research is towards the destruction of the intermediate hosts of pathogenetic organism as the most easy and effective means of combating infective disease. In malarial diseases prevention implies the detection and restriction of the particular species of mosquito in which the plasmodium malarie is conveyed from man to man, and in plague the rat must be extirpated as the most common and dangerous vehicle of transit of the bacillus from one human being to another. To destroy all peccant mosquitos and rats in places where malaria or plague exists or may be expected is a very large order and not easy to execute. And, after all, it is very questionable whether mosquito and rat intermediacy expresses the whole truth as regards the propagation of malarial fevers and plague. These measures, in as far as they are practicable, may be useful as incidents in a preventive campaign, but, until we know the whole truth, it appears to me to be unwise to put them forward as certain and sole preventives.

K. McL.

12th October 1899.

Current Topics.

THE DIRECTOR-GENERAL'S NOTE ON INDIAN JAILS.

THIS note on the health and sanitation of Indian Jails is attached to the annual Government of India Resolution, reviewing the Provincial Reports for 1898.

Surgeon-General Harvey quotes the following statement of the Inspector-General of Jails in Punjab, who wrote: "I hold very strongly the opinion that sickness and mortality occurring among the jail population (in the Punjab) are to a great extent preventable. Satisfactory results will only be obtained, however, by unremitting attention to their duties on the parts of

those responsible for the welfare of the prisoners from day to day." This opinion, the Director-General believes, is of general application, and we think correctly. "The labours of medical superintendents, however capable and devoted, will not however make up for the evil effects of bad sites and unsuitable buildings." The greatest care has been given to the water-supplies for many years and the importance of good cooking has been recognised; but pure air is as necessary as pure water, and until it is possible to thoroughly ventilate the sleeping barracks in the cold nights of winter without chilling the occupants, we cannot hope to banish pneumonia from the jails or to bring respiratory diseases and tubercular affections within the limits in which they should be restricted. "Pneumonia, under conditions of jail-life, seems to be frequently, if not always, an infectious disease, and should be treated accordingly, more specially, we may add, as much of the pneumonia of nowadays is of a influenzal type.

The Surgeon-General also discusses the prevention of malaria from the point of view of the mosquito theory. It will be comparatively easy to keep the jail grounds free from puddles, or even jail tanks free from mosquito larvæ; but it will not be so easy to keep the larvæ from flourishing in the rice-fields, tanks and puddles belonging to outsiders. Another question, which has yet to be decided, is to what extent attacks of malarial fevers are fresh infections or relapses. As the Director-General says: "Few convicts in Indian jails have escaped malarial fever before being sent to prison," and many such case get fever, apart from mosquitos, due to chills or other indiscretions. We are glad to see attention directed to the question of parasitic anæmia. Last year we called attention to the damage done to health by worm diseases in Cannanore Jail. Undoubtedly many obscure cases of "anæmia and debility" are due to parasites, ankylostomata and others. Why the term "debility" should be retained in the returns at all we fail to see. It puts a premium on carelessness.

— LINES FOR MEDICAL PROGRESS IN BENGAL.

A CIRCULAR has recently been issued by Colonel T. H. Hendley, I.M.S., C.I.E., in which he sketches out the lines on which future medical progress in Bengal should advance. Attention is first called to the fact that professional men, rich shopkeepers and other leading inhabitants do not subscribe liberally or in as large a proportion as they should do. The district and local authorities may fairly look to men of this class for the erection and endowment of special wards or cottage hospitals, for the endowment of beds, gifts of surgical instruments and surgical appliances, pictures, and many other things which would add to the usefulness of hospitals and dispensaries.

In especial Colonel Hendley asks that the following improvements may be carried out in all dispensaries, *viz.*, the provision of separate waiting-places or rooms for both men and women, and a screen and couch to be provided in the prescribing rooms for the private examination of females. In Colonel Hendley's words these are "absolute necessities for the proper, complete and decent examination of patients."

As regards the question of the number of hospitals and dispensaries this must of course vary with the density of population, means of communication and the amount of disease in the district, but Colonel Hendley is of opinion that we should not remain anything like satisfied till no person in Bengal is further than 15 or 20 miles from a dispensary and till every village or rural area of 3,000 persons has its own dispensary.

Another scheme for medical aid deserves a further and more extended trial, that is (1) to entrust village headmen, in places remote from dispensaries, with simple medicine chests for the treatment of the more common diseases, as malarial fevers, bowel-complaints, cholera, &c.; (2) to arrange for a visit from the Assistant-Surgeon, or medical subordinate in charge to places beyond a ten-mile radius from his dispensary; such places and times to be chosen where people come in large numbers, as on market days. All the local authority would need to do would be to provide the medical man with means of transport and to give him a box to store his medicines and a place to dispense them. On such days his work at the head-quarter dispensary would be done by the senior compounder or the hospital assistant from the police hospital, if at district head-quarters. Moreover, it is proposed, instead of accumulating supernumeraries in Calcutta as under the old system, to keep them at each divisional head-quarters, where they would be available for emergent or other temporary duty in the neighbouring districts.

There can be little doubt that the above proposals are of a practical nature and can be carried into effect in all districts with comparatively little expense.

— LABORATORIES FOR CENTRAL JAILS.

THE following note is from the Director-General's Note on Jails above alluded to:—

"It is in my opinion very desirable that a small laboratory should be fitted up in every central jail, with the necessary apparatus, to enable the medical officer to carry on investigations. It is only by investigation that we can hope to arrive at the truth regarding the causation of many of the diseases prevalent in our jails. Expenditure in this direction would be speedily rewarded, not only by the precision which investigation will lend to preventive

measures, but by the opportunity for research that the existence of laboratories will furnish to medical officers of the Jail Department.

THE JIGGER PARASITE.

DR. R. M. KALAPESI read a very interesting paper at the August meeting of the *Bombay Medical and Physical Society* on the recently imported jigger parasite which has been already described in our columns.* In the course of the discussion, Surgeon-General R. Harvey said that he had received a letter from a medical officer in Uganda giving an account of the jigger. When the prospect of the introduction of the parasite into India first arose, the newspapers were alarmist on the matter, but he had consulted all the available information on the disease, and came to the conclusion that there was no ground for fear; that jigger was not a disease formidable to life, and was easily preventable with ordinary care and cleanliness. The letter was read by Surgeon-General Harvey, it gave an account of the introduction of the disease into East Africa in 1890 by a ship from South America, its rapid spread after introduction and its present widespread prevalence in East Africa. The letter entered fully into the symptoms and pathology of the disease, and remarked that death seldom resulted, although loss of the feet or portions of them were common. Surgeon-General Harvey thought that the danger of jigger had been greatly exaggerated, as the disease could easily be prevented by careful attention to cleanliness. Cases had also occurred in India among the regiments which had returned from East Africa.

THE POLYCLINIC.

THE new college in London for medical graduates will probably be much patronised by medical officers from India at home on furlough. It is about time that London should organise the vast amount of clinical material it possesses, and its laboratories for post graduate work. More than a dozen years ago we spent five months at Vienna, and it amply repaid the professors and *privat docents* there to arrange special classes for the British and American medical graduates. The account given in *The Polyclinic*, the journal of the new college, is very interesting. The teaching consists of practical classes, clinical consultations and classes in connection with the college, as bacteriology under Professor Crookshank at King's College, mental diseases at Bethlem, and public health under Professor Winter Blyth. The practical classes (fees, one or two guineas) last for six weeks, usually twice a week; they are held in medical diagnosis, surgical anatomy, nervous diseases, ophthalmic surgery and the ophthalmoscope, the ear, the nose

and throat, and the use of X-Rays. In addition, there are courses of lectures on general ophthalmology, insanity, morbid conditions of the urine, skin diseases and pathology, each delivered by men who are experts in each line, as Marcus Gunn, G. H. Savage, A. P. Luff, J. Galloway and Woods Hutchinson. The journal presents monthly a record of the most interesting cases discussed at the Polyclinic with abstracts of clinical lectures, &c.

The present number contains an excellent practical lecture by Professor Clifford Allbutt on paralysis agitans, and a long series of extremely interesting cases shown and discussed at the consultations by Mr. Jonathan Hutchinson. These clinical consultations will probably be the most interesting part of the course. Already it is noted that no less than 521 medical men have joined the college. A more admirable scheme for "study leave" (when it comes) or for study on furlough could scarcely be arranged.

EAST AND WEST.

"THERE are large granaries in or near this quarter of the town which are infested with rats, and we have an unique provision for the conveyance of infection from house to house. . . . It was considered inexpedient to start a systematic campaign against these rodents, as the Marwaris and some of the other classes of the population object to their slaughter. . . . It appears that rats enjoy the special protection of Ganesh, the Elephant-headed God of Wisdom. 'These poor creatures,' writes the *Bangobasi*, 'have not been to Bombay, but were born and bred in Bengal. How then can they import plague.' [Extract from Dr. Neild Cook's Plague Report.]

With this contrast the following: "Were I now asked how I would protect a State from plague I would certainly answer—exterminate the rats as a first and most important measure; but in making this recommendation I would stipulate that the measure be taken in anticipation of the advent of the disease not when the disease had already shown its presence, and the rats are dying by thousands. It is too late then, an epidemic in full swing is hard to stop." [Extract from Dr. Manson's address at the opening of the Tropical School of Medicine.]

Comment is needless—as Kipling sings "the 'The East is East and the West is West.'"

EXTERMINATION OF MOSQUITOS.

WE have much pleasure in publishing in this issue the paper by Captain S. P. James, I.M.S., on how to find and identify mosquito larvæ. In our November issue Captain James pointed out that the extermination of the mosquito may not turn out to be the easy measure that readers of the accounts, in the home medical papers, of Major Ross' Sierra

* V. pages 135, 147, 160, 173 of 1899.

Leone expedition might be led to suppose. Most decidedly Captain James' observations that the most dangerous varieties of mosquitos breed in rice-fields and other large areas of water is in strong opposition to the teachings of the Sierra Leone expedition. If malarial mosquitos confined themselves to puddles and small areas of stagnant water, it would be possible "to indicate, with scientific certainty, the precise foci of malaria" and to get rid of the mosquito larvæ in them, but to do this with acres of rice-fields is a very different matter.

In a recent number of the *Journal of Tropical Medicine*, Major G. M. Giles, I.M.S., F.R.C.S., who is well known as a skilled biologist, gives a valuable account of the various forms of culicidæ employed by Ross in his investigations of malaria. Ross described three species, the "dapple-winged," the "brindled" and the "grey" mosquito. The "dapple-winged" species was the one in which he followed out the life history of the avian hæmatozoon. Two of these, Major Giles tells us, are new to science, the grey mosquito turns out to be the *Culex fatigans* of Weidemann. The "dapple-winged" belongs to the genus *Anopheles*, which is distinguished by the fact the palpi are about as long as the proboscis in both sexes, whereas in *Culex*, those of the male alone are as long, while those of the female are very short. "Associated," writes Major Giles, "with Ross' epoch-making researches, it appears appropriate that the two new species should be named after him." The three species, therefore, will stand (1) *Anopheles rossii* (or dapple-winged); (2) *Culex rossii* (or brindled) and the *Culex fatigans*.

Specimens of the *Culex fatigans* were sent to Major Giles by Captain Victor Lindesay, I.M.S., from Bakloh which shows that this species extends to a considerable elevation in the hills. As Major Giles' furlough will not be up till the middle of March next, it is to be hoped that more specimens will be sent to him as he requested in these columns in July last (p. 268).

MADRAS MEDICAL INSTITUTIONS.

THE professional reports included in Surgeon-General Sibthorpe's last annual report on medical institutions in the Presidency-town of Madras form exceedingly interesting and useful features in the report. In the report of the First Physician it is noted that "Phthisis continues to be an extremely common disease." Captain G. G. Gifford, I.M.S., writes that cicatrising granuloma (to give it its most correct title) can only be treated by complete and early excision, and that scraping, cauterization, &c., are practically always useless methods, that even after excision the disease frequently recurs and antisyphilitic remedies are absolutely of no avail. It is also noted that ankylosis of

joints due to gonorrhœal rheumatism, if the ankylosis leaves the limb reasonably useful had better be left alone—that fractured limbs of infants give excellent results when put up in plaster of Paris as soon as any heat at the seat of fracture has disappeared, that Murphy's button was twice used, and in both instances perforation and septic peritonitis with death was the result.

Appropos of beri-beri Captain A. E. Grant, I.M.S., writes that only one acute case has been admitted to hospital within the past eight years. This case came from a place a very long way from the endemic area of the disease—which is stated to be "the region between the Godavari and Kistna rivers." Even the more chronic forms of beri-beri are rarely admitted to the General Hospital, Madras. The sufferers are nearly always people who have lived in Burma, the Straits, or in the Kistna district. The acute form is easy to diagnose, provided one has seen one or two cases previously. The acute case referred to above is the only one among 12,000 admissions to the hospital. Dr. A. C. Rendle in the same report (p. 59) gives a few other cases of beri-beri, one which recovered is interesting. He suffered from diarrhœa, slight fever, œdema of the trunk, face and lower extremities, loss of knee-jerks and anæsthesia over front of both knees and back of elbows. The ova of ankylostoma were found. He slowly recovered under large doses of magnesia sulphate and citrate of potash—the urine increased and the œdema disappeared, the patches of anæsthesia disappeared. Another interesting case was one with mixed symptoms resembling pseudohypertropic paralysis and myxœdema. Dr. Rendle says "although the existence of beri-beri in South India is denied by many authorities, yet many of the cases occurring in the wards scarcely admitted of any other explanation unless we adopt the debatable term 'malarial neuritis.'"

We hope to give more extracts from these interesting reports in a future issue.

SUBSCRIPTIONS TO CHARITABLE DISPENSARIES.

THE attention of the Government of Bengal having been directed to the serious falling off in the subscriptions to dispensaries of Class II, that is those supported by district and municipal authorities, it has been directed—

(1) To appoint a Managing Committee for all such dispensaries, and that such Committees should meet more regularly than they do at present.

(2) The distinction between the local authority and the special Dispensary Committee should be made as clear as possible.

(3) The Civil Surgeon is to be a member of every such Committee.

(4) To this Committee the local authority should make an annual allotment fixed for three years.

It will then rest with the Municipal Committee to supplement the income thus assured by raising subscriptions. The Lieutenant-Governor is of opinion that the more complete the separation between charitable and municipal administration, the greater will be the encouragement to private liberality.—[Resolution No. 523 T.—M., 2nd November 1899.]

Reviews.

Diseases of Women in Bengali.—By GIRISH CHANDRA BAGCHEE. Revised and corrected by RAI DOYAL CHANDRA SHOME BAHADUR, M.B. Calcutta: SANYAL & Co., 1899.

THIS is a very admirable treatise in Bengali by Babu G. C. Bagchee of the Police Hospital, Calcutta. Following as it does very closely on the lines of Macnaughton-Jones' well-known treatise, it cannot fail to be useful. It is specially intended for female practitioners working in the Dufferin Hospitals. It can be thoroughly recommended to all Bengali-speaking practitioners. The volume is nicely got up and illustrated frequently.

No better volume on diseases of women could be placed in the hands of men of the Hospital Assistant Class.

Notes on the Therapeutics of Indigenous Vegetable Drugs.—By L. B. DHARGALKER. Bombay: *Tatva Vivechaka* Press, 1899.

THIS small book gives an admirable account of the botany and therapeutic uses of a large number of indigenous vegetable drugs used by *Hakims* and *Vaidis* in Bombay. The notes on the therapeutic uses on the drugs are short generally and frequently taken from standard works, as Watt's "Economic Dictionary," Waring's "Bazar Medicines" or the late Kanny Lall Dey's valuable work. The volume will, however, be found useful by all interested in the subject, and is for this purpose to be recommended.

(1) **The Complications of Cataract Operations and Their Treatment.**—By GEOFFRY C. HALL, F.R.C.S. (Eng.), Colonel, I.M.S. pp. 31.

(2) **A Few Words about Senile Cataracts.**—By GEOFFRY C. HALL, F.R.C.S. (Eng.), Colonel, I.M.S. pp. 62. Allahabad: The Pioneer Press, 1899.

THESE two booklets by the well-known ophthalmic surgeon of Allahabad may be noticed together, treating as they do of the same subject though from rather different points of view. The former was first published by Colonel Hall in 1886 and was intended, in the words of the preface, 'to help the many operators on the eye

in this country, as well as elsewhere, who find themselves in difficulties, to overcome some of the accidents likely to occur and to raise their percentage of good eyes.' Colonel Hall has found time, amid his many duties as Inspector-General of Jails and Officiating Inspector-General of Civil Hospitals, N.-W. P. and Oudh, to republish it to meet the demand that continues for it. It is an essentially practical account of the steps of Von Graefe's linear operation, the description of each stage and its possible complications being preceded by a short resumé of the anatomy of the part concerned. The complications and the best mode of dealing with them are very clearly and fully described, and the book forms a very useful guide, being more practical and explicit than text-books usually are: thanks to the enormous experience of the author.

In 'A Few Words about Senile Cataracts,' Colonel Hall goes into more detail about the cataracts met with in old people. He has himself done over 8,000 extractions and has all the lenses 'carefully packed in bottles to confute the doubter'; and as one result he objects, as will most surgeons, we think, for practical purposes, to the old classification of cataracts into nuclear cortical lamellar, &c. He says it does not matter to us where the opacity began, as before it is mature all the structures will be affected. *The most important part of the lens as regards the operator is undoubtedly the soft matter or cortex.* If fluid the operation is easy, if glutinous like the inside of a grape, the cortex causes great difficulties. He therefore names his senile cataracts (1) fluid (morgagnian), (2) semi-fluid, (3) semi-hard, and (4) hard, where the soft matter is dried up or absorbed and the capsule covers the hard centre. These varieties he recognises before operation and operates differently accordingly. The description of how to distinguish them might, we think, be fuller and clearer with advantage, though their diagnosis is no doubt difficult to put into words. After simple extraction atropine is used and not eserine, on the grounds (1) that eserine will not keep the iris in place if it tends to prolapse from a wrong incision; and (2) that with a wide pupil the aqueous can easily escape from the posterior chamber without carrying the iris in front of it. We would also urge against eserine that it does sometimes appear to cause or aggravate iritis and in some cases it causes vomiting. Another sound rule given is 'if in doubt about complete maturity, *always do an iridectomy.*' The reason for the rule 'don't dilate the pupil before operating' is not so clear. It may hold when about to do an iridectomy, but in simple extraction it is surely easier to remove the lens with a dilated than with a non-dilated pupil.

The two booklets together contain practically all that one can want to know about cataract operations, and they can be strongly

recommended to all in want of advice not to be found in ordinary text-books, given in this instance by one who is a master of his craft.

Syphilitic Diseases of the Spinal Cord.—

By R. T. WILLIAMSON, M.D. (London), M.R.C.P., Medical Registrar, Manchester Royal Infirmary, Assistant to the Professor of Medicine, Owen's College; and Honorary Medical Officer, Pendleton Dispensary (Salford Royal Hospital). With Illustrations and four Coloured Plates. SHERRATT and HUGHES, 27, St. Ann Street, Manchester, 1899.

THIS is a book which will be found interesting to neurologists, a more detailed account of spinal syphilis, both clinically and pathologically considered, being given than is usually found in systems of medicine. In the Manchester Royal Infirmary during a period of ten years, out of 14,575 in-patients, 2,456 were cases of nervous disease; excluding locomotor ataxia there were 32 cases of spinal syphilis; the term spinal syphilis being understood to mean those cases in which spinal symptoms only are present, or if cerebral symptoms are present, they are only of slight and minor importance. The book is devoted to the consideration of spinal affections produced by *acquired* syphilis.

On pages 8 and 9, the author gives a table of the chief clinical forms of spinal syphilis with their associated pathological conditions. He gives eight distinct forms, of which meningo-myelitis is the most common. In nearly all the vascular lesions are well marked. Under the heading of Erb's Syphilitic Spinal Paralysis in Chap. VIII, there is an interesting description of the microscopical examination of the cord, accompanied by diagrams. This case in symptoms corresponded to those described by Erb except in gait. The pathological changes were "endarteritis meningitis gummatous infiltration of the right antero-lateral column in the upper dorsal region; sclerosis of the periphery of the cord in the lateral columns in the whole of the dorsal region; sclerosis in the posterior median columns in the upper dorsal region; irregular sclerotic patches with one patch of cell infiltration in the lowest dorsal region; descending sclerosis in the lumbar crossed pyramidal tracts; ascending sclerosis in the cervical posterior median columns."

Chapters XII and XIII are devoted to prognosis and treatment. Of the 32 Manchester cases death occurred in 9, recovery in 10; in the other 13 either the disease remained stationary or varied from time to time, and the patient passed from under observation. Acute myelitis is the most fatal form. The prognosis is to be based on the evidences of extent of involvement of the cord, paralysis of the bladder, cystitis and bedsores being bad indications.

As regards cure, early treatment is of the greatest importance, mercurial inunctions with iodides being chiefly indicated with occasional

pauses. The most rigid cleanliness should accompany catheterization.

The book is well got up and is well illustrated. There are a few printer's errors. The difficulties of accurate diagnosis in spinal syphilis are great, and we share with the author the hope that future bacteriological research will lead to the discovery of a characteristic micro-organism in syphilitic lesions.

The Carlsbad Treatment.—For Tropical and Digestive Ailments, and How to Carry it out anywhere.—By L. TARLETON YOUNG, M.D. (Dub.), Major, I.M.S. Second Edition, Revised. London: W. THACKER & Co. Calcutta: THACKER, SPINK & Co., 1899.

It is with very great pleasure that we call attention to a new and thoroughly revised and enlarged edition of Major L. T. Young's well-known volume on the Carlsbad treatment of tropical ailments. The first edition was very well received by the profession in India, and the treatment therein advocated has been largely made use of by medical men in India.

The intention of the book is not only to instruct the physician in the method of carrying out the full details of the Carlsbad treatment but also to instruct the patient. The book is therefore in some parts written in a clear, simple and non-technical style, which enables the patient fully to grasp the complex details necessary to thoroughly 'carry out the famous treatment or 'cure' of Carlsbad.

The volume begins with hints on local customs and the method of conducting the course there, with full detail as to diet, drink and amusements, the various kinds of baths, &c.

Chapter IV is of particular interest to us in India, as it gives simple full and precise instructions as to the method of carrying out what our author calls an "artificial Carlsbad course" either in India or at home. It is clearly pointed out that a course at Carlsbad or elsewhere will not cure everything. "Its sphere is limited to conditions of impurity of the blood, arising from imperfect action on the part of the digestive and blood purifying organs;" for example, dyspepsia, ulcer of stomach, dilatation of stomach, congestion of liver, gallstones, jaundice, diabetes, intestinal catarrh, some forms of chronic dysentery, gravel, uterine inflammations, obesity and gout, &c., &c.

The following extract briefly sums up the at home or artificial method of conducting the course:—

Procure a dozen bottles of the imported natural water (Sprudel). Pour out 6 oz., and warm it by putting the glass into warm water. Drink this first thing in the morning fasting, then take a quiet 20 minutes' stroll, return and take another 6 oz., to be followed by another 20 minutes' stroll, return and take a third dose of 6 oz., after which take another walk for one hour.

and return to breakfast. It must be distinctly understood "that no breakfast must be taken until at least an hour after the last dose has been consumed." The course lasts only for 21 days. Full details are given in the volume about the not very difficult to carry out rules as to diet. In India the full course should not be taken in the plains in the hot weather; the cold weather is the most favourable time, but even in the plains in the hot weather it can be taken for three to seven days for attacks of "liver," dyspepsia, &c., and it is often useful in checking an attack of boils. The following articles of diet are to be *rigorously excluded*, fresh *uncooked* fruit (stewed fruits are allowed), salads, acids, cheese, butter, tinned fish, nuts, sweets, all spices, condiments and curries, beer and port or sherry.

After thus giving full instructions as to the cure and the diet several chapters follow, which are of special medical interest on the conditions necessitating the use of Carlsbad treatment in tropical countries, *e.g.*, malaria, its nature and effects on the system, dysentery, tropical diarrhoea or hill diarrhoea, liver congestions, &c. Another chapter of great interest is on some forms of dyspepsia common in the tropics. The volume concludes with hints to tropical residents and officials on retirement; an appendix discusses the operation of colotomy in obstinate cases of chronic dysentery. On the whole, we have every confidence in strongly recommending this volume to all medical men in the tropics. A perusal of it cannot fail to be of interest and value, and it will give the practitioner many hints which he will find useful in his daily round. The volume is illustrated and admirably printed and got up; in conclusion, we can strongly recommend it to all medical men in India.

Current Literature.

SURGERY.

The Healing of Vaccination Sores.—By A. K. Bonu (*Maryland Medical Journal*, July 1st, 1899).—The writer says that in view of the anti-vaccination movement it is well to examine our work, to see that we are doing all that can be done in the prevention of accidents and suppurations following vaccination. While the glycerinated virus is rarely followed by suppuration, it occasionally occurs. The suppurating vaccination sore does not heal readily under the ordinary antiseptic dressings, but a single application of a solution of nitrate of silver, eighty grains to the ounce, and over this a dressing of absorbent cotton with bismuth, will heal almost any case within a week. He questions whether all vaccination vesicles ought not to be at once opened and the application of the nitrate of silver made to the interior. If the whole protective influence of the vaccinia has already been received when the papule begins to swell into the vesicle, the prompt treatment of it is desirable, and no good reason can be given why it should not be carried out.

A simple means of uniting the Intestine by Suture.—By J. Thienot (*Revue Illustrée de Polytechnique Médical et Chirurgicale*, May 30th, 1899).—As useful in an emergency the author describes a simple and apparently practical means of uniting the intestine by suture. It consists of a rolled visiting card inserted into the divided ends of the intestine, and as it has a certain resiliency, as soon as it is released by the fingers it fills the lumen of the intestine and permits of an accurate adjustment of the sutures. It belongs to the same class of aids as bone plates, sections of carrots and potatoes, rubber rings, inflatable rubber bags, etc. The mere enumeration of these various devices would occupy a very considerable space, but they all serve substantially the same purpose, merely allowing of a more ready adjustment of the sutures and a more perfect coaptation of the divided ends of the intestines. It is probable that the device of Criel is as good as any of its class, and it certainly has the merit of great simplicity.

Surgical Shocks.—By R. H. M. Dawbarn (*The Canada Lancet*, June 1899).—Lately, while reading Lauder Brunton's work on the action of medicines, I was struck by the emphasis with which he states that most of the deaths put down to chloroform are really deaths from shock. Dr. Dawbarn too thinks that too little attention is paid to shock. He says that our chief aim should be to prevent shock rather than to treat it after it has been developed. This prevention lies in the careful preparation of the patient before the operation. He advocates the use of strychnine, as also does Brunton, and suggests that operations should be shortened by dividing them into stages. If shock does occur, the best treatment is undoubtedly intravenous injection of normal saline solution. In most cases the median basilic vein should be chosen. High rectal injections of hot saline fluid are also useful.

The temperature at which the fluid should be introduced is 120°F., and roughly estimated is about as hot as the hand can bear. The writer attaches much importance to the high temperature at which the fluid is introduced, and states that text-books are in error when they recommend the use of a fluid at a temperature of 100°F. The high temperature is stimulating to the flagging heart and maintains the tonic contraction of the peripheral vessels. The quantity introduced should never be less than a litre, giving it very slowly—never less than ten minutes to a litre. The plan which has lately been adopted by some operators of introducing the fluid before the operation is begun he condemns, as it increases the hemorrhage. There is no objection, however, to a large colonic injection in advance of operation.

Recent progress in the treatment of some of the dangerous complications of Suppurative Middle Ear Disease.—The following important extracts are from a paper with the above title by W. Milligan, M.D., in *The Medical Chronicle* for July 1899:—The cavity of the middle ear is liable to be attacked by acute inflammatory processes either from the pharynx or post-nasal space along the Eustachian tube or from the outside by way of the external auditory meatus. In many cases the process is acute, runs a rapid and painful course and ends in resolution with healing. The acute stage may, however, pass into a chronic suppurative condition, frequently a source of danger to life, and causing damage to the delicate structures of the middle ear and to the ear as an organ of special sense. The effused products of inflammation are pent up in the tympanic cavity giving rise to pain, rise of temperature, severe subjective noises, etc. As they increase the membrana tympani is unable to stand the strain, and perforation results. As regards operative interference whenever possible the membrane should not be perforated, but vigorous attempts should be made to cause

absorption of the fluid by means of active local depletion, by internal administration of warm alkaline aperients, by rest in bed and by packing the meatus with antiseptic dressing.

[Dr. Milligan does not mention the great value of the frequent use of Politzer's bag in this stage. It should be used daily and the naso-pharynx cleansed by a simple alkaline douche and afterwards brushed with astringents. The Eustachian catheter is also extremely useful, as by opening up the generally swollen and congested tube the contents of the middle ear will escape. If free Politzerisation is used, it may never be necessary to puncture the membrana tympani. Even after puncture the bag should be used to clear out discharge.] Should tension, however, become great, as is evidenced by rise of temperature and pain, and by great bulging of the membrane, an immediate paracentesis should be performed. A common complication of acute suppurative middle ear disease is acute suppurative inflammation of the mastoid cells which communicate with the middle ear by means of the "aditus ad antrum." This passage frequently becomes closed owing to swelling of the mucous lining, and mastoid empyema takes place with a collection of pus within the antrum or mastoid cells. The roof of the antrum is but a thin plate of bone and may become perforated with the result that septic meningitis or an extra dural abscess may be established. The necessity thus arises for exposing and clearing out the diseased contents of the mastoid cells. The author recommends the Schwartze-Stacke operation.

In the Schwartze-Stacke operation the *modus* is as follows: At first the mastoid antrum is opened in the ordinary way. The cartilaginous meatus is now carefully lifted from its bed and thrown forward with the attached auricle on the cheek. In this way the membrane (or the remains of the membrane) is fully exposed. The bridge of bone separating the opened mastoid antrum from the cavity of the middle ear is now carefully chipped away, great care being taken that the facial nerve is not injured when removing the deepest part of the bridge. When this removal of bone has been affected, the contents of the middle ear, which are now fully exposed, should be inspected, and carious ossicles, granulation tissue, etc., removed. A fairly large cavity is now left—the antro-tympanic cavity—and the object in view is to effect a lining of this cavity with epithelium. To attain this end the posterior wall of the cartilaginous meatus is split longitudinally in the middle line right up to the concha, and then a crucial incision is made. The flaps thus formed are turned against the bone, the one upwards, the other downwards, and are kept in position by means of sutures. From the edges of these flaps epithelial proliferation gradually takes place, and if the packing which is conducted per meatum, is carefully carried out, within from two or three months, the whole antro-tympanic cavity should have become nicely papered with a permanently dry epithelial lining.

I have dwelt at some length upon this method of dealing with chronic mastoid disease, because it is undoubtedly one of the greatest advances that has been made of late years in the treatment of this affection.

Other complications which are prone to follow suppurative middle ear disease are

- (1) extradural abscess,
- (2) meningitis suppurativa,
- (3) intracranial abscess,
 - (a) cerebral
 - (b) cerebellar
- (4) thrombosis of the intracranial venous sinuses, more especially the lateral,
- (5) pyosepticæmia.

These conditions must be treated by operative interference as soon as ever detected.

De l'ablation de la prostate hypertrophie par la voie perineale.

(Removal of the hypertrophied prostate through the perineum). Par M. le Dr. R. Bandet (*Gazette Hebdomadaire de médecine et de Chirurgie*, August 6th, 1899).—Dr. Bandet advocates the removal of the entire prostate and gives a successful case operated on by his method. After the usual preliminary precautions a catheter is passed into the bladder and the anal orifice closed with two of Kocher's forceps to prevent any contamination. An incision in the form of an inverted Y is then made. Commencing above just behind the scrotum the two arms diverge towards the ischial tuberosities at two centimetres from the anus. The tissues are divided until the levatores ani muscles come into view. The central fibres which go to the rectum are divided. The rectum is then drawn backwards by an assistant, and the operator separates it from the tissues in front with his fingers cutting such fibres of the levatores ani as remain with the fascia of the raphé, the rectum being freely separated from the prostate in front. There will probably be severe hemorrhage from the hemorrhoidal vessels which must be checked by forceps and pressure. The capsule of the prostate is next incised from before backwards. Enlarging this opening with scissors the prostatic tissue must be removed piecemeal, and this presents some difficulty and requires patience. Having removed as far as possible the median and lateral lobes the wound is closed, and the prostatic capsule is fixed to the sheath of the levatores ani. The catgut sutures then pass outwards through the ischio-rectal tissues and are tied, thus drawing down and somewhat everting the prostatic portion of the urethra. The hemorrhoidal vessels having been ligatured, the levatores ani should be reconstituted by sutures and connected again with the walls of the rectum. Deep sutures passed through the ischio-rectal tissues and out through the skin uniting the various skin incisions. With strict aseptic precautions drainage will not be necessary, but if there is any fear of infection a drainage tube must be inserted into the bladder as in the operation for lithotomy.

Hernia following Operations for Appendicitis.

—By Francis B. Harrington, M.D., Boston (*Boston Medical and Surgical Journal*, August 3rd, 1899).—From January 1888 to August 1897, 503 cases of appendicitis recovered after operation by various surgeons at the Massachusetts General Hospital; of these Dr. Harrington personally examined 236 cases in order to observe the condition of the abdominal wall following this operation. The time which had elapsed since the operation varied from nine months to nine years. Many of those who reported themselves as perfectly well had marked bulging of the abdominal wall on the side operated upon. Some had protrusions of the wound, and some had hernias of which they were not aware, as they caused no trouble. The scars varied in length from one and a half to seven inches. In width they varied from the linear to the very broad, in some instances being four inches wide, showing the result of stretching. Occasionally a scar showed a keloid condition. There were 27 cases of true hernia among the 236 examined.

Hernia and bulging occur frequently after operation for appendicitis, and result from the separation of muscles and other tissues in the scar. They are very common when drainage has been used.

The muscular and tendinous fibres should not be transversely cut in any appendix operation unless it is unavoidable.

As little drainage material as safety will permit should be used. When drainage is necessary the wound should be closed as far as possible with sutures and the drainage removed as early as safety will permit. If the wound can be closed immediately, the tissues should be restored to their normal position by suturing each layer.

Stout belts and trusses are of little value and may even do harm.

The abdominal muscles from the earliest period possible after operation should be developed by appropriate exercises.

If hernia or marked bulging appears, operation for cure is safe and satisfactory.

J. H. T. WALSH.

EXTRACTS FROM FOREIGN MEDICAL JOURNALS.

Laparotomy in Tubercular Peritonitis.—In the *Gaz. hebdomadaire de médecine et de chirurgie*, No. 61 of 1899, Hildebrand states that he has found by experiment that, on exposure to the external air, as by laparotomy, the peritoneum becomes hyperæmic. This hyperæmia lasts for several days, and is followed by venous congestion, a condition which, here as elsewhere, favours the cure of the tuberculous process. [Our readers may remember the effects of venous congestion, produced by bandages applied above the knee, in tubercular disease of that joint.]

The Sterilisation of Catgut.—As is well known it is difficult to secure that this useful material shall become aseptic, and at the same time retain its toughness. Hartmann (*Gaz. hebdomadaire*, No. 70 of 1899) finds that he can attain this end by treating the catgut which he uses for abdominal operations thus: it is placed in a hot-air chamber, the temperature of which is raised so gradually that it attains 100°C. only after four hours. At 100°C. the temperature is kept for one hour, and then it is gradually raised till, at the end of two hours more, it attains 140°C.—the operation of sterilisation thus requiring seven hours for its completion.

The Antiseptic Properties of the Tears.—Valude has found that the lacrymal secretion is a bad culture-medium for bacteria, and that it is capable of neutralising to a greater or less extent the bacillus anthracis, the *b. coli*, and staphylococcus pyogenes aureus. On the other hand he has found that where the lacrymal secretion is *acid*, post operative infection, especially of the iris, is likely to take place.—(*Gaz. hebdomadaire*, No. 76.)

A New Method of Causing Opacity of the Crystalline Lens.—Jocqs, from experiments which he has performed on dogs and rabbits, proposes that the lens should be rendered opaque thus: after instillation of cocaine, the fine needle of a Pravaz syringe is introduced through the corneal margin, into the anterior chamber; a few drops of the aqueous humour are sucked up into the syringe, and the needle is then introduced into the substance of the lens, into which the aspirated liquid is injected. The lens becomes opaque in from two to five days, and may then be extracted as in the case of a soft infantile cataract.—(*Ibid.*)

Methylene Blue as a Sedative in Acute Mania.—Bondoni, working in Morselli's clinique, finds that this drug has a distinct vaso-constricting action. In fifteen cases of mania in which he had injected it, he obtained a distinct sedative effect, without any evil result—the patients showing, soon after the injection, signs of general depression, which were followed usually by sleep.—(*Gaz. hebdomadaire*, No. 77, Ext. from *Klin. therap. Woch.*)

Electrolysis in the Treatment of Urethral Affections.—Larroud6 in his inaugural thesis at the Paris Faculty (No. 515 of 1899) claims for *linear* electrolysis, employed in the treatment of urethral stricture, the following advantages:—

1. It is easy of application, and of service in all save very bad strictures.
2. It is not very painful, and causes very little if any bleeding and from rarely follows the operation.
3. There is no instrument left in the urethra.
4. The patient can pass water freely immediately after the operation, and in most cases can go about his avocation next day.

On the other hand Desnos recommends the employment of a weak current, the s6ances extending over a considerable time, as he believes that the "rapid" method

of electrolysis, necessitating as it does, the employment of a current of high intensity, does not promise well for the ultimate safety of the urethra, while he has seen cases, treated by Newman's "slow" method, show, after ten or twelve years, no signs of recurrence, the urethra being paved with what appeared to be normal mucous membrane. (*Gaz. hebdomadaire*, No. 78.) [Years ago Bruce-Clarke praised "rapid" electrolysis of urethral stricture, but this method did not catch on in England apparently.]

The Anatomy of the Spleen.—Constantinesco (*Th6se de Paris*, No. 633 of 1899) thus modifies the usually accepted description of the anatomy of the spleen. The organ has three surfaces, one anterior, and two posterior, the gastric and the renal, separated by a well-defined ridge. The shape of the organ is that of a triangular prism; it lies, very obliquely, in the left hypochondrium, and extends always from the eighth rib down to the eleventh rib or lower; it is entirely covered by peritoneum, save at the hilum, and it has four ligaments. These are the gastro-splenic, pancreatico-splenic, phreno-splenic, and spleno-colic; ligaments other than these have naught to do with the development of the peritoneum in the f6etus, and consequently must be regarded as secondary or, it may be, abnormal. The organ is fixed by its relations to the left kidney, and by the pancreatico-splenic ligament.

Enterocolysis in Enteric Fever.—This is extolled by Hondeletk (*Th6se de Lyon*, No. 85 of 1899) as tending to reduce the temperature, lessen the tympanites, and pain, and arrest putrefactive changes in the large intestine. He states that it is especially in adynamic cases that the value of enterocolysis is seen, and says that cases of enteric fever treated thus run a short and favourable course; in fine, he claims for enterocolysis all the advantages and none of the ill-effects of the cold-bath treatment.

A Substitute for Liquor Arsenicalis given "per os."—This Renant of Lyons claims to have found in *cacodylate of sodium*: Cacodylic acid being derived from the oxidation of dimethylate of arsenic. The sodium cacodylate contains 46.87% of arsenious acid, and its aqueous solution is very stable. Renant finds that rectal injections of 5 cc. of a 1—800 solution of the salt are well supported by the patient, and are to be preferred to rectal injections of Fowler's solution, where the patient cannot take arsenic by the mouth. In the "pre-tubercular stage" of phthisis, diabetes, exophthalmic goitre and leukæmia, he has employed these injections thus: For six days two injections daily are given, then three injections daily for six days; then the drug is withheld from three to five days, after which the treatment begins *de capo*.—(*Trib. m6d.*, 20th Sept. 1899.)

Vaginal Hysterectomy in the Tropics.—Dr. Gabriel Casuso, the Editor of our contemporary *El Progreso M6dico*, of Havanna, publishes, in the September number of that journal, a series of 63 cases of vaginal hysterectomy, operated on by him in his private clinique since August 1893. All these cases recovered, though one was a bleeder, and three had secondary hæmorrhage after removal of forceps, and in one case a Doyen's forceps gave way 24 hours after the operation. The cases were—as we have been able to classify them—42 in which the uterus was "fibrous," or contained a fibroma in its cavity or in its walls.

4 in which there was a fibroma complicated by retro-uterine hæmatocele.

4 fibroma and hydrosalpinx.

1 fibroma, hydrosalpinx, and cystic ovary.

8 fibroma with cystic disease of one or both ovaries.

1 fibroma with cystic disease of the tubes.

1 fibroma with cyst of the broad ligament.

2 bleeding fibroma for which the appendages had been previously removed, without stopping the hæmorrhage.

Dr. Casuso now prefers the ligature,—after forcipressure, method of hæmostasis—and practises vagino-

peritoneal suturing. We offer him our congratulations on the excellent results which he has obtained, and recommend our Indian confrères to ponder the fact that, in a climate which is somewhat like that of Bengal, success can be attained in the case of *European* patients as well as with mulatresses and negroes.

W. D. SUTHERLAND, M.B.

SPECIAL SENSES.

The Relation of Asthma to Diseases of the Upper Air-passages has been discussed by the Laryngological Society of London. The general impression left by the debate was that nasal treatment has been overrated as a cure for genuine asthma. In a few cases brilliant and—more rarely—lasting results may be obtained; in a certain number of instances some relief and comfort may be secured; but in the largest number of instances no success is to be looked for, and it is not even justifiable to submit the patient to any intra-nasal treatment. A wider knowledge and experience of general medicine on the part of rhinologists might have spared many asthmatics a good deal of useless surgical treatment. The nose should be left alone unless there are very obvious conditions calling for interference. The most common condition met with is nasal polypi; but we must remember that these may be consequential, as well as causal. In the former instance their removal will certainly benefit the patient—but it will not do more than that.—(St. Clair Thomson, in *Practitioner*, Aug. 1899.)

The Employment of the Kalt Suture in Critical Cases of Cataract Extraction.

Kalt introduces a thread suture on a short sharp curved needle without a cutting edge through the clear cornea about 2.5 mm. from the limbus; penetrates well into the corneal substance, but not entering the anterior chamber. The exit is in the clear cornea near the limbus. The needle is then made to re-enter the episcleral tissue in like manner just behind the limbus, leaving enough space for the corneal section to lie between the sclera and the corneal portions of the suture. A loop of thread two or three inches long is pulled out and left between the two insertions, and placed to one side to avoid being cut in making the incision. After the completion of the extraction the slack is pulled through and the suture tied; producing some puckering of the cornea which disappears however at the first or second dressing. Dr. Kalt, of Paris, who introduced it claimed that this corneo-scleral suture diminished the percentage of iris prolapse after simple extraction. Dr. S. D. Risley, of Philadelphia, has tried it in three cases with success (*The Therapeutic Gazette*, June 15th, 1899). In all three a prolapse of vitreous was expected, rendering extraction hazardous, and occurred. In all three the suture when tightened slowly caused the vitreous prolapse to return, and the eyes were closed without loss of vitreous. The after-results were most satisfactory and recovery rapid. Dr. Risley mentions one objection to the suture in a possible increased danger of infection of the cornea at its entrance and exit. This did not threaten in any of his cases however, and he remarks that the danger probably finds compensation in this respect by the rapid closure of the corneal section.

Treatment of Cataract in the Madras Ophthalmic Hospital from 1857.

—In the transactions of the South Indian Branch of the British Medical Association appears a paper read before the branch by Lieutenant-Colonel T. H. Pope, I.M.S., giving the results of his researches into the old records of the hospital of which he has been for several years superintendent. The progressive history of the treatment of cataract, as illustrated by the remarks of the various distinguished officers of the Indian Medical Service who have been superintendents, taken from their annual and other reports, is very interesting. The first recorded remarks are by Dr. J. Liston Paul in 1858, who operated upon practically all cataracts by anterior solution with Jacob's

needle. Dr. George Smith succeeded him and wrote much on ophthalmic surgery. He was a perfect master of the ophthalmoscope, and his descriptions of the various diseases of the fundus of the native eye are admirable. He valued the operation of anterior solution, but preferred it in cases of congenital cataract, and monocular cataract in children and middle-aged persons. Posterior solution (from behind through the sclerotic), introduced by Martin of Calcutta, he regarded as founded upon a wrong principle and abandoned it. *Extraction* he found promising (in 1864), meeting with four failures in 21 cases, and encouraged by the success met with at Calcutta and Mozufferpore (by Macnamara) he determined to continue performing it. Archer in Calcutta had 16.5 per cent. failures after extraction, Macnamara, 15 per cent., and in 1866 Smith had 32 per cent. failures, but he did not select his cases. The following remarks occur in his Report: "Many of the conditions regarded as unfavourable to the operation of extraction are present in the native, but most of these can be overcome by mechanical means, care, manual dexterity, or by modifications of the operation itself. As to the rest, diseases of the cornea, iris, vitreous humour, and the deeper tissues of the eye forbid the operation; but I doubt if contracted pupil, moderate posterior synechia, slight synchysis of the vitreous humour, chronic cough, or difficulty of breathing, should prevent our giving the patient the chances of restoration of vision by extraction." Anæsthesia was rarely used—"the pain, to the native being quite inconsiderable"—no speculum was used. Iridectomy was only done in cases of large prolapse of iris, undilatable and rigid pupil, largeness of lens, smallness of corneal flap and in unripe cataracts—very much the same conditions which influence modern operators in choosing the combined method. The lids were stitched together after operation, and an opium plasma and shade applied. Prolapse of iris was replaced gently and light allowed to fall upon the sound eye. Eserine was used and lunar caustic to arrest the protrusion. Mr. Drake-Brockman's work from 1875 to 1892 is described, and the percentage of success in cataract operations rose from 80 per cent. to 96.8 per cent. in 1891. The greater part of this period was before the introduction of cocaine (1884), and chloroform and methylene bichloride were used. Carbolic dressing and the spray gave poor results, and phenyl no better. Dry dressing with absorbent wool were then adopted with success, and latterly boracic acid and iodoform were used. The various operations for extraction performed by Mr. Drake-Brockman are described, and in particular that step in the operation which was first introduced by him, and which Colonel Pope still practises, known as "*primary capsule rupture*." The initiatory step in this operation is a division of the lens capsule by a stop needle, the pupil having been previously fully dilated by atropine. He first adopted the plan in morgagnian cataracts in order to gain a more exact knowledge of the size of the nucleus and so limit the size of the corneal section. From these cases he applied it to all kinds of cataracts, and his success, and Colonel Pope's continuance of it, prove the modification to have been useful. The advantages of the plan are summarised as follows:—(1) capsule can be lacerated freely while anterior chamber remains full; (2) exposure more complete and size and character of cataract better known; (3) it diminishes tendency of iris to contract, even after corneal section completed, and by this means facilitates escape of lens; (4) size of corneal section necessary can be better judged; (5) introduction of traction instrument to remove lens less necessary and natural position of structures of eye-ball less interfered with. Iridectomy was rarely performed by Mr. Drake-Brockman. The author promises another paper on his results since he became superintendent in 1892, and we hope Colonel Pope will fulfil his promise ere long.

F. P. MAYNARD, M.B., D.P.H.

OBSTETRICS.

The Position of the Gravid Uterus at the Onset of Labor.—Dr. Alexander MacLennan (*Glasgow Medical Journal*, July) concludes a paper on this subject as follows: "1. Right flexion with right rotation is by far the commonest deviation. No case of the converse was met with. 2. Flexion is caused by purely mechanical conditions, and it will tend to produce rotation to the same side. 3. Flexion has no relationship with presentation or position of the fœtus. 4. Rotation is due to laxness of the uterine ligaments, and possibly to an irregular contraction, but not to an irregular arrangement of the muscular fibres. It may replace lateroflexion as an attempt at accommodation. One case showed in the space of three days, first symmetry, then rotation to the right, and finally rotation to the left. 5. Only two cases of flexion without rotation occurred, and these were complicated by contracted pelvis. 6. An absolutely symmetrically placed uterus is more common in primiparæ, but one medianly placed, if accompanied by rotation, is commoner in multiparæ."

Vomiting of Pregnancy.—Buford, after reviewing the physiology of vomiting, comes to the conclusion that the anabolism of the fetus and mother gives us an increased generation of the irritant which causes emesis, and a deficient elimination by the kidney produces its accumulation in the system. Summarizing these, he reaches the following conclusion: 1. The *casus casus* of vomitus gravidarum is not a reflex but the by-products of anabolic cell metabolism, which acts centrally as apomorphia does. 2. The nephritis, which is usual concomitant of vomitus gravidarum, and is itself the result of hyperhydrochloria, is the cause of deficient elimination. The postulate that defective nutrition is a result of the above conditions is an accepted fact. The therapeutic endeavour should be directed to relieve the cause. This is best done: *a*, by lavage of the stomach thoroughly three times a day with alkaline antiseptic solutions; *b*, baths and massage to enable the skin to assist the kidney; *c*, by exercising freely in open air; *d*, the diet of proper quantity and quality. The induction of abortion to relieve vomiting of pregnancy he has never seen justified, and it is only mentioned here to be condemned.—*Memphis Lancet*.

Menstruation by the Ear.—M. Lermoyez (*Presse médicale*, July 15th) recently reported to the *Société médicale des hôpitaux* the case of a young girl in whom menstruation had been established three years previously, the flow taking place from the right ear. Regularly every month, after a period of prodromes consisting of headache and general lassitude, a flow of clear non-coagulable blood took place from the right ear, in which no pre-existing local lesion could be determined. After three years the ordinary genital discharge began to take place, gradually replacing that from the ear, which only occurred every two or three months. The author remarks that the nature of the auricular hæmorrhage admitted of no doubt, being periodical, preceded by a regular local moulting, and the blood being non-coagulable. As to the ear, the blood came from the walls, the tympanum being intact. Hysteria would naturally be thought of, yet the patient showed none of the ordinary stigmata of that disease. The author, nevertheless, considered this auricular menstruation as in all probability of that nature, for on the side of the bleeding ear there was slight hyperæsthesia of the tympanum and auditory canal, as well as a certain degree of auditory anaesthesia; and the coincidence of these symptoms is, according to the author, one of the best signs of auricular hysteria that we have.

Organotherapy in Gynecology.—After noticing some of the reported facts in the literature of gynecology of thyroid treatment, Dorland reports six cases in which this medication was used. He concludes that the thyroid, in addition to its general effect on metabolism, exerts an inhibitory action on the pelvic

genital organs, and the uterus in particular, especially marked in the epithelial elements of its lining. As a result of this there is a retardation of hæmorrhage from the uterine mucosa, which is directly antagonistic to the effect of ovarian secretions. Thyroid therapy is especially indicated in hæmorrhagic affections of the uterus and all forms of pelvic congestion, notably in uterine fibromata, hæmorrhagic endometritis, menopausal hæmorrhages and chronic tubal diseases. The best results are to be expected in fibromata and recently developed pathologic conditions. The more chronic cases are more resistant. It also produces an increase in tissue changes of the mammary glands, and is therefore indicated in cases of insufficient lactation. Owing to the tendency to thyroid intoxication, it is well to discontinue the use of the drug for a week or ten days at intervals during the course of treatment. Thyroid treatment is contraindicated in tuberculosis, which it seems to stimulate, and in serious heart disease, and it should be discontinued on the appearance of tachycardia. He also reviews the facts as to the use of mammary and parotid glands. Shober has reported a decrease in the size of tumours treated with mammary gland, which he thinks acts on the uterine muscles and connective tissues somewhat similarly to ergot. It has never given rise, in his experience, to any unpleasant symptoms. He has also had gratifying results in the use of parotid gland in ovarian disorders, inflammation, congestion, neuralgia, etc.—*Therapeutic Gazette*.

K. N. DAS, M.D.

ANNUAL REPORTS.

THE BENGAL SANITARY COMMISSIONER'S REPORT.

MAJOR H. J. DYSON, F.R.C.S., I.M.S., submits this report. It is noted that the registration of vital statistics has "much improved" of late years; in 1898, the birth-rate in Bengal is quoted at 35·7, and the death-rate at 26 per mille of the population. At this rate we may expect the next census to show a very considerable increase in the population of Bengal. The reduced birth-rate is said to be due "chiefly to the effects of the late famine," and what is practically the same thing "the high prices of food-grains." If this is so in Bengal, which on the whole suffered comparatively little from the late famine, it would be interesting to know if a similar or greater lowering of the birth-rate took place in other provinces. At time of writing only the Punjab Report is at hand to refer to, and we find Major Bamber, in a similar way, explaining the slight fall in 1898 of the Punjab birth-rate as due to the scarcity in the preceding year. The Punjab birth-rate is 41·7 (average) compared with 35·7 in Bengal. On the other hand, the Bengal rate is well ahead of any other province except the N.-W. Provinces and Oudh. In Madras the birth-rate is given as low as 27·4 per mille. As regards calculated average death-rate (five years), the Central Provinces is the worst, Bengal comes fourth on the list, the Burma and Madras have the lowest death-rates. Patna Division which shows a higher birth-rate suffered the most severely from famine in 1897, and on the above reasoning it might have been expected to show a lower rate, indeed the fifteen "famine districts" of Bengal show an appreciable increase in the birth-rate. This only shows in our opinion that till registration is far more perfect than it is, it is useless to speculate on the causes of decimal point increases or decreases in vital statistics. The Bengal provincial death-rate is given as 26·57, an improvement on the previous year due to the greater healthiness of 1898; but we can only guess how near or far this figure is from the truth till the next census is published. The high death-rate in Siliguri was due to the abnormal presence of fever in that district, so close to the Darjeeling Terai. It would be interesting to know how far what is in the Duars popularly called "blackwater fever" is responsible for the increased death-rate among natives. At any rate a death-rate of over sixty per thousand in the Siliguri Terai, almost entirely due to fever, does not look as if the inhabitants of the Terai had acquired much immunity against malaria, a subject which has recently been talked much about.

As regards the incidence of the chief diseases, we find that the year 1898 was a "best on record" for cholera, never has the death-rate in Bengal been so low for this disease. While the year 1897 was slightly over the ten years' average (which is 2·66 per mille of the population), in the year 1898 this fell to below one per mille (·91), the normal rainfall, providing full tanks and wells, probably had much to say in producing this good result, in that

the scantier the water-supply, the easier is the general supply polluted. The great improvement in the health of the great pilgrim-resort Puri is attributed to improved sanitary conditions in the town and to the new railway allowing of the rapid dispersion of the pilgrims. Whether this is so or not time will tell. The permanganate purification of wells was tried in several districts, but the report gives no details on this interesting point. We are glad to see that 4,296 coolie emigrants were inoculated against cholera during the year by Captain Vaughan, I.M.S., and Assistant-Surgeon G. C. Mukerjee. No information as to the degree of protection afforded was received from the Assam tea-gardens. It would be interesting and in some cases not difficult to obtain this information. As usual the dry months from December to May were the worst for cholera. The interesting diagram on page 26 illustrates this point graphically. As regards small-pox it remained about the level of the ten years' average (19 per mille). Orissa suffered most from small-pox, especially in Puri, Cuttack and Balasore. The disease in Puri "seemed to spread up from Ganjam" and was worst on villages near the Trunk Road. Clandestine inoculation is still carried on in many parts of Orissa and in the unprotected neighbouring Native States. This report makes no reference to vaccination which is dealt with separately.

"Fever" is the heading in the mortality returns under which most deaths in India are recorded, and we may admit that though the term "fever" (as interpreted by village headmen) is a very wide and elastic one, yet the figures returned from year to year under this head give us some grounds for comparing the relative intensity of malarial fevers and their sequelæ from year to year and from place to place. The mortality under this heading during 1898 was considerably lower than in the former year. We are not much impressed by the remarks quoted from civil medical officer's reports on page 34; whether the mosquito theory be true or not (and we are by no means inclined to subscribe to all that our London confrères claim for it), yet it would be interesting to see how far the theory works out as explaining the persistence or the increased or decreased incidence of the disease from year to year. Lieutenant Colonel Ffrench-Mullen in his remarks quoted (on page 34) is on surer ground when he calls attention to "the wave of the nature of influenza which occurred in Rampur Baulia in March and again from August to October." Colonel Ffrench-Mullen was able to observe this wave accurately among his jail patients, and as there was a marked rise during the same months in the district mortality, there is little doubt but influenza prevailed in the district as well as in the jail.

Major Dyson discusses the difficult question of the effect of short rainfall on the general health. This is a complex question, and depends, as Major Dyson says, on the character of the country. To profitably discuss it, it would be necessary to examine the effects of short normal or excessive rainfall in districts fairly similar to each other, and in regard to each separate disease, a pretty big task. As regards malarial fevers, an examination of the question made a couple of years ago seemed to us to point to some conclusion like the following. Normal rainfall seemed to bring in its train good crops and a good crop of malarial fevers, scanty rain seemed to be accompanied with poor agricultural crops and a lesser prevalence of malarial fevers, excessive rain seemed to drown both the crops and the malaria. This appeared to be generally true, but exceptions could easily be quoted. Another point is that the total figures for the rainfall of a year are not the most important, e.g., when we say as above "normal" rainfall we do not only mean a total rainfall up to the ten years' average, but well distributed seasonal rainfall, with intervals or breaks evenly distributed throughout the rainy season. In this connection too we would like to see how the mosquito theory fits in. But to return to Major Dyson's report on page 35, an interesting resumé of the opinions of Civil Surgeons is given on the question raised by the Civil Surgeon of Faridpur in 1897, that the ill health of that district was to be attributed the common practice of jute-steeping. The Civil Surgeons of ten out of thirteen districts, in which this practice obtains, agree that the practice though disagreeable was not specially favourable to the production of malaria, as Major D. G. Crawford, of the 24 Parganas, says "a nasty smell is not necessarily injurious to health." Dr. Blaker says "the water in which jute is steeped is most objectionable, and if drunk, may give rise to bowel-complaints. This can be well believed, but Dr. Blaker shows that fever prevalence is not worse in the parts of his district, Dinajpur, in which jute steeping is practised than in parts where it is not. Moreover, as Major Dyson points out during the months for jute steeping (June to October), the rivers in Eastern Bengal are full and flowing, and good drinking water is abundant. On the whole, we agree with the majority of the opinions quoted that the practice, though unpleasant, is not prejudicial to health. The smell, bad as it is, is not worse than that produced from "flax steeping" in the North of Ireland.

During 1898, there was no case of plague found upon any of the 227 vessels which arrived at the Port of Calcutta from plague infected ports of India; though during the Calcutta outbreak one customs officer (who lived in a plague infected ward in the city) was fatally attacked. No dead or dying rats were found on the vessel (S. S. *Onda*).

A short account is also given in Major Dyson's report of the various Plague Interception Camps on the chief railway lines. We are glad that experiments are being made in Calcutta on the new biological method of sewage treatment.

This very interesting report concludes by giving the Sanitary Engineer's reports on his inspections of the various municipal water-works in Bengal.

MINUTES OF PROCEEDINGS OF THE SANITARY COMMISSIONER FOR MADRAS.

THIS is a volume which we do not remember having seen before. It contains an account of the proceedings of the Sanitary Commissioner of Madras for the second and third quarters of 1898. It contains a large amount of subject-matter of general medical interest. It begins by giving an account of much recent work on the spread of tuberculosis among cattle and animals as illustrating the infectiousness of the disease. An account is also given of the prevalence of tuberculosis among men in asylums and prisons to illustrate the infectiousness of the disease. One remark on page 120 we must take some exception to, referring to Green's oft-quoted remarks (r. Hirsch) as to the prevalence of tuberculosis in the central jail at Midnapur. It is known that this prison has for many years been notorious for tuberculosis, and the present Editor in 1893 called attention to the disease in Midnapur Jail in these columns. But the remark to which we think exception might be taken is that "phthisis is in general a rare thing in Lower Bengal." In another place the present Editor has discussed this question and shown that tuberculosis is by no means so rare in Bengal as is often supposed. It is shown by recorded statistics that tuberculosis is the cause of one death in every twelve (1 in 12) in the native army and prisons of India. In England it is said to be the cause of one death in every seven, so that a disease which causes one death in twelve cannot be considered rare in India.

It would be of interest to find out to what extent tuberculosis is prevalent among cattle in India, but till a general use is made of the tuberculin test this will not be known (v. remark, *supra*, p. 417).

Another interesting feature in Lieutenant-Colonel King's report is the discussion on the prevalence of anthrax among human beings in Madras. In more than one district Colonel King records that fatal cases among men have occurred. In Vaniyambadi there were, in 1896, thirty-one cases with ten deaths, and in Colonel King's opinion this by no means represents the total mortality from human anthrax. It is shown that the rough and ready methods of drying and preparing hides in India are quite insufficient to kill the microbe, and it is said that cases in England have been traced to hides imported from India. Major Marsden, I.M.S., and Assistant-Surgeon Sundrum give clinical accounts of several very interesting cases. Lieutenant-Colonel Lancaster, I.M.S., also gives cases, all these show clearly that anthrax is not unknown as a human disease in Madras and probably elsewhere in India, and in these days of bubonic plague cases have been mistaken for plague. Colonel King shows that external anthrax or malignant pustule is often mistaken by villagers for small-pox, and internal cases of course are hidden under the all-embracing term "fevers."

Many years ago Lieutenant-Colonel A. Tomes, now retired, wrote of anthrax cases in these columns as having been met with in Midnapur district. We may add a remark on anthrax among wool-sorters. In the large woollen factory at Bhagalpur Central Jail an enormous quantity of raw wool, both clipped and wool cut from dead hides of sheep, is used, but with one exception it is known that no case of anthrax or wool-sorters' disease has ever been met. The exception occurred in the case of a young European Factory Assistant who got a vesicle on the thumb with fever and swelling of arm and axillary glands. Prompt incision probably saved the thumb. The case was seen, when in the convalescent state, by Major H. Pilgrim who inclined to agree with the diagnosis. The Bhagalpur experience at least points to the extreme rarity of the affection in India as conveyed by wool.

The report under review contains a large amount of valuable observations and experiments on the relative value of disinfecting agents carried out at the Plague Research Laboratory, Bombay, by Major Bannerman, Mons. Haffkine, Dr. E. Marsh and Dr. Watkins-Pitchford. In another part of the report Colonel King gives his views on the necessity of a well-established Annual Vaccine Depot in Madras, and incidentally touches on a subject referred to in our correspondence columns in September. This is the use of glycerine lymph in India. Colonel King points out that even germ-free glycerine lymph will not exclude the germs on the surface and inner layer of the child's skin; but there is a greater objection, says Colonel King, to the use of glycerine lymph. It takes from four to six weeks to make glycerine lymph free from extraneous organisms, but the Chintadripett depot only claims a period of activity after preparation of one fortnight. So that, as Colonel King says, if this lymph is kept for four or six weeks, "the tube would be the only part left." Colonel King quotes Monkton Copeman's opinion in 1894 that "anhydrous lanoline had the property of inhibiting the growth of saprophytic

organisms in a similar manner to that of glycerine." We may add, however, that Dr. Copeman appears to have given up this view, for in his Milroy Lectures (pp. 173-4) he distinctly states that his colleague, Dr. Blaxall, has found that "from this point of view neither vaseline nor lanoline can be regarded as possessing any value whatever." It would be interesting, as Colonel King says, "to know how Dr. Copeman reconciles his present attitude with his former statements." Colonel King remains in his opinion that "lanoline has a special virtue of being inimical to penetration by microbes when exposed to air," a claim originally made by Gottsein.

We are in entire accordance with Colonel King's arguments in favour of the cultivation of animal lymph under the skilled supervision of a specialist.

We can commend these minutes to the consideration of our readers, we have only indicated a portion of the interesting matter contained in them.

Correspondence.

DIPTEROUS LARVÆ.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—With reference to the interesting notes in the October number of the *Indian Medical Gazette*, on Dipterous Larvæ in the alimentary canal by Major John Smyth, I.M.S., I may mention that the day before reading them a patient of mine, who has suffered from an obstinate tape-worm for some months, passed numerous white grubs in his morning stool. They were exactly like the grubs one so often sees in the too-familiar *post-mortem*, and varied in length from $\frac{1}{4}$ " to $\frac{1}{2}$ ". The former just moved, the latter climbed about the stool in their usual active manner. On enquiry I ascertained that the patient had twenty-four hours previously eaten some over-ripe custard apples. Flies had probably settled inside the burst fruit and their eggs when swallowed had rapidly developed in the alimentary canal. No more were passed by the patient. On the same day, however, he had two more stools, and in one of them passed a very large number of separate tapeworm 'links' (over 100)—perhaps the two inhabitants did not agree.

Dr. Manson in his 'Tropical Diseases' mentions the occasional presence of the larvæ of dipterous insects in man's intestine (Tropical Diseases, p. 558).

Yours, &c.,

F. P. MAYNARD, M.B.,

Major, I.M.S.

HAZARIBAGH,
20th October, 1899.

KELOID GROWTHS.

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Just after reading Dr. Powell's note on keloid growths in your August issue it happened that I had to inspect 1,710 prisoners; bearing Dr. Powell's remarks in mind, I looked out for keloid growths and only found thirteen in all. I should have guessed that more would be found, for I consider them very common in natives of India. Curiously though, nearly all Hindus and not a few Mahomedans had ring holes bored in their ears, I did not happen to find a single ear keloid, though I remember to have often seen them. Of the 13 noted to-day one was in connection with a burn by boiling water, one on the site of a boil or abscess, and all the rest on vaccination scars. In a few cases I was able to ascertain the exact date of vaccination as follows:—Prisoner No. 594, two small raised keloids on vaccine scars of left arm, size of two anna bit raised and rounded like half a marble, two larger ones on other arm; all in scars of vaccination noted as successfully done in Suri Jail in August 1897; therefore, about two years ago:

CASE 2—No. 2,138—Two keloids raised and rounded size of four-anna bit on vaccine scars, done in Monghyr on 21st September 1898, therefore about one year ago:

CASE 3—No. 2,137—One large raised claw-like keloid (or rather cheloid) two inches long, half an inch broad, and fully half an inch high, with projecting claws like a large beetle, in a vaccination scar, on other arm two raised rounded keloids also on vaccination scars. The vaccination was also done in Monghyr Jail on 24th September 1898; therefore keloids were under one year's growth:

CASE 4—One large (size of six-penny bit) keloid on right arm in a vaccination scar, vaccination done at Baraset in March 1898; therefore seventeen months ago:

CASES 5 AND 6—Two Burmans in both two large raised rounded keloids in vaccination scars, the scars were those of vaccination done at Rangoon in February 1892; therefore seven years old.

I think these fibrous tumours are, as Dr. Powell says, common in the natives of India, and especially in connection with cicatrices

of successful vaccination. Why one vaccination should be so followed and another not I suppose no one knows. According to Prasmus Wilson (*apud* Quain) the tumours should be called cheloids and the term keloid restricted to flat cicatrices.

BHAGALPUR.

Yours, &c.,
W. J. B.

Service Notes.

AN interesting circular from the Director-General, I.M.S., has recently been published for the information of Indian Medical Officers. With a view to securing a succession of officers highly trained in bacteriological work, the Government of India, with the concurrence of the Secretary of State, has decided that a selected officer of the I.M.S. shall always be attached to the Medical School at Netley for the purpose of undergoing training. The selection will ordinarily be limited to officers who have completed the prescribed time of military duty, and while on furlough have devoted at least a year to the systematic study of bacteriology and pathology or bacteriology and hygiene in a recognised school in great Britain or on the Continent, and the selected officer will be attached to the Netley Medical School for one year, to be extended under certain circumstances to two years. The officer for the period he is so attached will be granted extra leave, which will count as service in India, on the pay and allowances admissible to him on ordinary furlough, and he will retain a lien on his Indian appointment. Officers who wish to have their names registered as candidates desirous of receiving this extra training at Netley, should apply to the Director-General, through the usual channel, giving a precise account of the special training in bacteriology, &c., they have already undergone and propose to undergo.

WE have much pleasure in giving currency to the above circular, the training now given by Prof. A. E. Wright at Netley, is now admirable in every respect, an example of it may be seen in a recent communication by Captain Lamb, I.M.S., on Malta fever antitoxin in a recent number of the *Lancet*. In this issue we publish an admirable account of the Technique of Widal's Reaction by Lieut. W. Glen Liston, I.M.S., another of Professor Wright's pupils.

BRIGADE-SURGEON S. C. AMESBURY, I.M.S. (*retired*), has taken out a patent for an automatic folding dooli.

LIEUT.-COLONEL ADAM SCOT REID is promoted to be Colonel, I. M. S. He is at present Administrative Medical Officer, C. P.

No. 48 and Sections C and D, 56th Native Field Hospital, have been ordered to the Mishmi Expedition: Captain P. W. O'Gorman, I.M.S.; Captain C. D. Dawes, I.M.S.; and Captain A. F. Stevens, I.M.S., will be in charge. Major J. Daly, I.M.S., will be P. M. O. of the expedition.

MAJOR W. B. BANNERMAN, I.M.S., showed H. E. the Viceroy over the Parel Laboratory at the recent Viceregal visit to Bombay.

MAJOR F. P. MAYNARD, I.M.S., who has returned to duty as Civil Surgeon of Hazaribagh, after a temporary deputation to Patna, will probably take furlough early in the spring.

It has been decided to allow members of the Indian Subordinate Medical Department to join Volunteer Corps.

LIEUT.-COL. MORRIS, R.A.M.C., who resided in the Medical Officers' quarters, adjoining the Presidency General Hospital, Calcutta, was bitten by a rabid dog and left on 9th November for Paris for treatment at the Pasteur Institute.

It would be interesting to know on what medical grounds an officer "on sick leave in England" may be reported "as fit for service in South Africa," yet "unfit to return to India." Such is, however, the wording of a recent decision of the War Office.

DR. P. B. C. AYRES, C.M.G., who died recently, was for some time Medical Officer, Eastern Bengal State Railway, and Civil Medical Officer, Silsaur, Assam. He was afterwards for 24 years Inspector of Hospitals, Hongkong.

A RECENT Assam Gazette contains the draft rules for the "Berry-White Medical School" at Dibrugarh. Certain scholarships previously held by Assam students in the Medical School, Dacca, have been transferred to the Assam school.

It is well-known that this school is due to the liberality of the late Brigade-Surgeon John Berry-White, I.M.S., who left Rs. 50,000 for this purpose. The Civil Surgeon of Dibrugarh shall

be *ex-officio* Superintendent of the new school. The school buildings are now finished.

A RECENT number of the *British Medical Journal* contained an appreciative article on the teaching of practical anatomy in India—*apropos* of Major R. Havlock Charles' paper on the subject at the recent R. M. Association. Both Lahore and Calcutta have now first-class dissecting rooms. Major Charles, I.M.S., notes a decided lack of enthusiasm among native medical students for the appointments of demonstrators and prosectors—posts eagerly sought for by the European Medical student at home.

THE Transvaal War even in its beginning is severely trying the resources of the undermanned Army Medical Department. Not less than 200 Medical Officers of R.A.M.C. are out or on their way out. Their places at home are being taken by civilian practitioners at the rate of £270 per annum pay.

MAJOR E. W. GRAY, M.B., F.R.C.S.I., R.A.M.C., whose death is reported in the fighting around Ladysmith, was a distinguished graduate of Trinity College, Dublin. Not content with his Trinity degrees before entering the service, he also took the License and Fellowship of the Irish College of Surgeons and the L. A. II. He had only served in India for 18 months, his previous foreign tours of service having been in Egypt and the Mediterranean. He had no former war service.

MAJOR J. F. DONEGAN, R.A.M.C., who was left at Dundee in charge of the wounded and is now a prisoner at Pretoria, is a L. R. C. P. and L. R. C. S., Edinburgh. He has been in India for four years. He served in the Tirah Expedition. We have not been able to find out the names of the other Medical Officers who were left at Dundee along with Major Donegan.

WE understand that, owing to the initiative of Colonel T. H. Hendley, I.M.S., C.I.E., the Government of Bengal will grant the sum of Rs. 1,000 *per annum* for the upkeep of a circulating Medical Library for use of Medical Officers in Bengal. This is a great step in the right direction. The want of a good Medical Library in Calcutta has long been felt.

WE wonder under what inspiration that precious Baronet, Sir Claude de Crespigny, made his astounding and malicious statement that "unless General Symons was killed by the Army doctors there was every hope of his recovery." The *Lancet* very properly calls this libellous statement a piece of "after-dinner buffoonery." We find in *Who's Who* that this facetious speaker is an ex-Captain of the Linerick Militia and the Suffolk Hussars. He was also a "War correspondent up the Nile." His favourite recreation is noted as "ballooning" to this, in the *Lancet's* words, we would add "buffooning."

A CAPE TOWN correspondent of the *Medical Press* states that several well-known British Medical men have been ordered to leave Johannesburg, and adds, "The Transvaal Government is making preparation in a way. Of course it has no organised military medical service, but the St. John's ambulance centres in Pretoria and Johannesburg are organising corps." Many Cape Town Medical men are volunteering for ambulance work. If the horrible stories in the papers are true, about the Boers firing on the wounded and ambulance corps and on hospitals, it is clear they have not yet learnt the meaning of the Geneva Cross.

SIR GEORGE SCOTT ROBERTSON, K.C.S.I., I.M.S., whose retirement has been gazetted, is said to intend to enter Parliament in the Radical interest. It will be interesting to see the Radical M. P. defending a "forward" Frontier policy.

It has recently been decided to call for a list of all Medical Officers possessed of a thorough acquaintance with the working of the X-Ray apparatus. We endorse the suggestion of the *Pioneer* that classes should be formed at all the big stations in India for instruction of Medical Officers in the use of these instruments. For those who can get furlough the "X-Ray" classes formed at the new Polyclinic would be admirably adapted.

THE figures given by Lord George Hamilton to show the considerable decline of venereal disease in the British Army in India are very hopeful. The admission rates to hospital for this class of disease for the past four years are as follows:—

1895	...	522	per mille.
1896	...	511	" "
1897	...	486	" "
1898	...	363	" "

LIEUT.-COLONEL W. H. CADGE, I.M.S., retired from the service on 15th November. He had been for many years in civil employ in the North-West Provinces, and went home on medical certificate in May 1899.

THE war in South Africa should give an excellent opportunity for testing the value of the latest kinds of dried foods for use by soldiers in the field. Major W. C. Beevor, R.A.M.C., in a recent lecture at the United Service Institution, gave an interesting account of his investigations in this direction. He said (in May last) "we have already got dried foods which I trust we shall be able to supply to soldiers in a few months' time and enable them with about half a lb. weight in their pockets to remain for 24 hours without hunger and without exhaustion from want of food." Meat, eggs, potatoes and milk are thus dried, and from experiments made by the Guards they appear to have been very successful. For the sick in hospital the value of desiccated milk which by aid of water can be turned readily into palatable milk will be immense, and vastly superior to the sugary stuff called condensed milks.

Gazette Notifications.

BOMBAY.

Major H. W. STEVENSON, I.M.S., Major T. D. G. BARRY, I.M.S., and Lieutenant-Colonel O. H. CHAMBERLAIN, I.M.S., have been allowed by the Government of State to return to duty within the period of their leave.

The services of Major H. MARTIN, R.A.M.C., were placed at the disposal of the Government of India.

Major A. E. J. CROLY, R.A.M.C., is appointed to be Medical Officer of the Staff of H. E. the Governor of Bombay, *vice* Major H. MARTIN, R.A.M.C.

Major H. HERBERT, I.M.S., has been permitted to return to duty by the Government of India. Major C. F. WILLIS, I.M.S., was appointed to be Civil Surgeon of Belgium and Deputy Sanitary Commissioner, S. B. District.

Lieutenant-Colonel K. S. NARAYAN, I.M.S., has handed over charge of the office of Deputy Sanitary Commissioner, Gujarat Registration District, to Major T. E. DRYDEN, I.M.S.

On return to duty Lieutenant-Colonel O. H. CHAMBERLAIN, I.M.S., is appointed to act as Sanitary Commissioner with the Government of Bombay, *vice* Lieutenant-Colonel J. W. CLARKSON, I.M.S., on leave.

Lieutenant-Colonel A. W. F. STARRER reverts to his appointment as Deputy Sanitary Commissioner for the Central District.

Major B. B. GRAYVOOR, I.M.S., is reappointed Civil Surgeon of Saurashtra.

GOVERNMENT OF INDIA.

Captains A. E. ROBERTS, D. M. DAVIDSON, F. P. MAYNARD, J. G. LAMONT, A. H. NORR, A. COLEMAN, W. W. WHITE, D. T. LANE, B. G. MACWART, W. H. E. WOODWARD, W. J. BRIDGMAN, and J. K. CHAMBERLAIN, I.M.S. (Bengal), are promoted to rank of Major, I.M.S. (Medical Department No. 1105, date 11th October 1899).

The services of Major H. HENDLEY, I.M.S., are replaced at the disposal of Punjab.

Major W. ROYALDSON CLARK, M.B., I.M.S., is appointed to be Joint Medical Officer of Simla.

Captains P. J. DEWEY, J. O. PIERCE, P. C. H. SIBBELLAND, T. W. STEWART, J. L. T. JONES, W. E. JESSONS are promoted to the rank of Major, I.M.S.

The services of G. S. THOMSON, M.B., I.M.S., are replaced at the disposal of the Military Department.

The services of Captain G. LAMB, M.B., I.M.S., are placed temporarily at the disposal of Bombay for plague duty.

Lieutenant-Colonel Sir G. S. ROBERTSON, K.C.S.I., I.M.S., is permitted to retire from the service from 2nd October 1899.

PUNJAB.

An extension of furlough (m. c.) is granted to Major T. R. MULLINERY for six months.

N.-W. P. AND OUDH.

Dr. H. A. MACLEOD, in civil medical charge of Bulandshahr, is allowed six months' extraordinary leave without allowances.

Lieutenant-Colonel H. HASTINGS, I.M.S., to the civil medical charge of Almorah, in addition to his military duties from 6th October 1899.

Captain C. MILNE, I.M.S., is appointed to have medical charge of the camp of H. H. The Lieutenant-Governor of N.-W. P. and Oudh.

Lieutenant-Colonel A. W. CARLTON, R.A.M.C., acts for Major J. J. PRATT, I.M.S., as Civil Surgeon of Naini Tal in addition to his military duties during the latter's absence on privilege leave.

Military Assistant-Surgeon E. P. CLEMENT is posted to the civil medical charge of Hardoi.

Lieutenant-Colonel B. O'Brien, I.M.S., is appointed to be Civil Surgeon of Allahabad.

Captain J. M. CRAWFORD has been recalled from leave, and been appointed Civil Surgeon, Muttra.

Captain C. T. BIRDWOOD, I.M.S., is transferred from Gharipur to Ballia as Civil Surgeon.

Major J. F. MACLAREN returns to Gharipur as Civil Surgeon from Allahabad.

Military Assistant Surgeon W. HEATHCOTE from plague duty, Saharanpur, to the civil medical charge of Unao district.

BENGAL.

Captain A. GWYTHER, I.M.S., is appointed Civil Surgeon of Hooghly, *vice* Lieutenant-Colonel R. L. DURR, retired.

THERAPEUTIC NOTES.

THE following is one of Unna's formulae for the treatment of lupus, which would probably act admirably in many cases of Oriental sore, Delhi boil, &c. :—

R	Salicylic acid	...	...	3 iiss
	Cresote	...	...	3 v
	Simple wax	...	...	3 iii
	White wax to	...	...	oz. 9

THERAPEUTIC PREPARATIONS.

"Soloid" Staining Reagents.—Messrs. Burroughs, Wellcome & Co. have recently brought out an admirable list of staining reagents in the forms of soloids each one grain. We have tried the following and found them in good condition, viz., 'Fuschine,' 'Bismark Brown,' 'Methylene blue,' 'Eosin,' and 'Gentian violet.' They are admirably adapted for easy carrying about and should be found extremely useful in camp or on expeditions where microscopic work might be necessary, a number of fluid staining bottles could not be carried. Also for those who do not need to use the microscope regularly they are exactly what they require.

The same firm's tabloid of bone marrow we have used recently on some cases of anemia with excellent results. They are certainly reliable and keep good for a great length of time. We can also recommend the same firm's *Cascara* tabloids, either plain or sugar-coated. They can be had in either 1 or 2 grain tabloids.

The well-known American firm of Messrs. Parke, Davis & Co., through their representative in India, Mr. N. Rudolf, Simla, have sent us a number of their elegant and valuable preparations, among which may be mentioned their *Ergot Acetic*, a sterilised concentrated non-irritant hypodermic use. Each bulb contains an ordinary dose of ergot, it is also free from the deleterious ergotinic acid. Another well-known American preparation is *Liquor Sedans*, composed of black haw (*Viburnum prunifolium*), hydrastric and Jamaica dogwood. The combination is highly esteemed by gynecologists as an uterine and ovarian sedative.

Another well-known combination is *Syrup Trifolium Comp.*, which has a reputation of being a specific for syphilis, it is especially used on the treatment of secondary and tertiary manifestations. The same firm make up excellent Glycerin suppositories which form admirable substitutes for Glycerin Enemata, their capsules of *Fervous Carbonate* (Bland) can also be recommended. *Taka Diastase* is one of the new digestives which has come to stay. The dose is 1 to 5 grains taken during or immediately after a meal. Messrs. Parke, Davis & Co.'s aluminium hypodermic syringe possess many advantages, among them the well filling piston, a finger guard to prevent slipping and needles on quite a new principle. The needles fits into a screw nozzle, they are made of seamless steel tubing, and six sparo needles are kept in a small tube in the case. Another advantage not to be dispised is that a vial containing six new needles can be obtained at a cost of only 2s. All parts of the little instrument are interchangeable and all the parts are kept in stock by the Simla Agent. The aluminium case also contains six tubes containing tables of all the drugs usually required for hypodermic use. In 1897 an editorial in our columns called attention to the wonderful results of the Woodbridge or "abortivo" treatment of typhoid fever. We are informed that several medical men in Simla during the past year have been using this method of treatment, and steadily prescribing the Woodbridge antiseptic tabloids.

Papain-Finkler.—This purely vegetable product is one we have had special experience of, and can recommend it for use in cases of flatulent dyspepsia and those cases of chronic diarrhoea so common in the tropics, which are usually so little amenable to treatment.

SOME OF THE LESS COMMON EFFECTS OF MALARIA, WITH REMARKS UPON THE TREATMENT OF CHRONIC INFECTION.

The *Medical Record* of April 29, 1899, tells us that Dr. William H. Thomson contributed a paper with this title to the meeting of the New York Academy of Medicine, held April 20, 1899. He said that in 1862 he published a paper in which he argued that the chief facts concerning the communicable diseases could be explained only on the assumption that they were due to micro-organisms, but this assertion had been received with much ridicule, as the prevalent belief at that time had been that these diseases were due to volatile poisons. But long after that time malaria held its own as a disease of this class—a distinct miasm, as its name implied. Our point of view in regard to malaria has, however, wholly changed, and our present view regarding it constitutes a very great advance in medicine. If the inoculation theory should become thoroughly established, it would mean practically an effectual check to the spread of malaria. Dr. Thomson said that in 1896 he had had in his hospital services two cases of fatal cerebral malaria, in which the diagnosis had been verified by autopsy. Both patients were Germans over sixty years of age, and both had contracted the disease while working in

gardens on Long Island. The temperature had varied between 99° and 101° F. for eighteen days. Although vigorously treated, there had been no diminution in the large number of plasmodia present in the blood. Their condition resembled that of one suffering from uræmia. At the autopsy the cerebral vessels had been found loaded with pigment. Such cases should suggest that when the origin of a febrile coma was obscure, the blood should be examined for the malarial organisms.

In those functional nervous affections, such as periodical neuralgias, dependent upon malarial infection, Dr. Thomson had had much success from combining ergot and quinine, even when large doses of quinine, antipyrin, and similar remedies had totally failed previously to give relief. In every case of this kind ergot had been uniformly successful. In some of them the administration of moderate doses of quinine with the ergot had produced cinchonism, which had not been the case when much larger doses of quinine had been given without the ergot.

If every first attack of malaria be treated carefully for six weeks, the author felt sure that there would be few cases of chronic malaria. Numerous observations on the incubation period following the first infection have shown that it varies very greatly in different persons. It was this feature of latency that persuaded patients to drift on without systematic and sufficiently prolonged treatment. The blood should be examined microscopically at intervals for at least nine months after apparent recovery. Chronic malarial infection implies a personal susceptibility, either original or acquired.

The treatment of malaria which Dr. Thomson would recommend begins with a mercurial laxative, given toward the close of the febrile paroxysm. The quinine should be administered from one to two hours before the time for the chill, but as one large dose is apt to disturb the stomach, it is better to give the desired quantity of quinine in three equal doses at intervals of two hours, the last one being given one or two hours before the chill. A most valuable adjuvant to quinine is ginger, given in the same dose as the quinine. Another useful addition is capsicum, in one-fourth of the dose of quinine. It is a curious fact that the first dose of this combination usually acts as a free purgative. In forty-seven cases of Cuban malarial fever that had resisted the usual treatment last fall the author had adopted the plan of giving camphorated tincture of opium as an adjuvant to the quinine, and with remarkably good results, as already published. Perhaps, the most striking action of this combination was in the improvement of the general condition, and the buoying up of the spirits. A good method, at times, of administering the paregoric is by mixing it with the old compound infusion of cinchona.—(*Therapeutic Gazette*, Sept., 1899.)

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co., Calcutta.

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The Report on Madras Medical Institutions.
The Report on Madras Civil Hospitals, &c.
The Imperial Bacteriologist's Report.

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